CALIFORNIA
OIL WORLD

PUBLISHED TWICE A MONTH
FOR TIMELY, COMPLETE
CALIFORNIA OIL NEWS COVERAGE

PETROLEUM PUBLISHERS, INC.
MEMBER AUDIT BUREAU OF CIRCULATIONS
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FIRST ISSUE
• JULY, 1947
VOL. 40 • NO. 13
WHOLE NO. 1731

California Oil World is published twice a month at 706 So. Valencia St., Los Angeles 14, California. Entered as Second-Class Matter, April 29th, 1944, at the post office at Los Angeles, California, under the Act of March 3, 1879. Subscription price $1 per year in U. S. and possessions, $2 in foreign countries, including Canada. Member of the Audit Bureau of Circulations.

July 15th, 1947
Telephone FAirfax 6218

Washington Highlights

Oil refineries in the United States can handle 5,648,000 barrels of crude daily, according to a report made by the refining capacity committee of the National Petroleum Council. Refineries currently, however, are averaging only 5,130,000 barrels a day or 91 per cent of capacity.

The lag was blamed largely on steel and transportation shortages and an inept Government policy which has discouraged and denied consent to construction programs, primarily designed to increase refining capacity. Strikes were also held accountable for the subnormal refinery output.

Robert E. Wilson, chairman of the refinery committee and board chairman of Indiana Standard, issued the report. He said nine per cent of the refineries are closed for one reason or another. These plants represent a total capacity of 227,555 barrels daily.

The meeting of Secretary of the Interior Krug's 15-man military petroleum advisory committee delved deeply into the oil supply situation. This group was set up some weeks ago on an order from President Truman to unify and coordinate Federal policy and administration as concerned oil.

Based on estimates of the National Petroleum Council, the military services and Government agencies will require approximately 330,000 barrels a day during the next fiscal year. This is six per cent of the nation's output.

The council indicated Army-Navy consumption of jet fuel will double during the year, with military demand for aviation gasoline also increasing.

The special grand jury in Los Angeles, authorized by U. S. Attorney General Tom Clark to investigate gasoline price increases in the West, has completed impanelment. The jury probably will be in session for six months or more. It will investigate all phases of the industry, including production and marketing.

A California delegation has arrived here seeking an appeal to the U. S. Supreme Court for a rehearing or a motion for further arguments on the high court's decision awarding the Federal Government title to oil-rich offshore lands.

The delegation, headed by California Attorney General Fred N. Howser, also includes, William W. Clary, Assistant State Attorney General; James S. Dean, State Director of Finance; Stuart Watson, executive officer of the California Lands Commission; Irving M. Smith, Long Beach City Attorney; and Harry J. March of the Long Beach Oil Development Co. and Southwest Exploration Co.

Since arrival the California party has been conferring with officials of the Interior Department and attorney generals of other states.

A spokesman for the California group said the conferences with Federal departments may lead to workable agreements whereby the status quo may be preserved, permitting interested oil companies to continue their withdrawal of petroleum from tidelands pending the court's final decree.

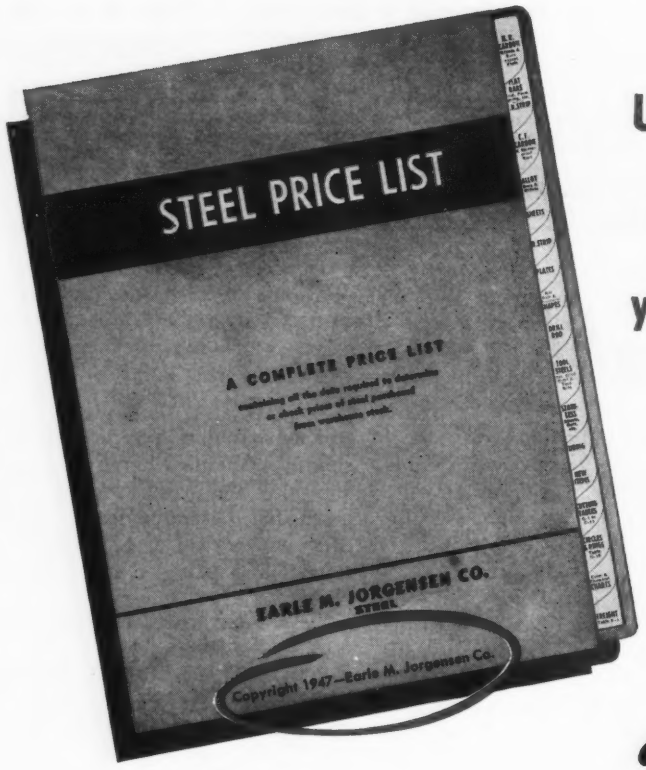
The Senate Foreign Relations Committee has revised and approved the Anglo-American oil agreement. This action was not taken however, until the committee was certain the pact would not foster international control of the oil industry in United States.

Before approving the pact; the committee ratified three reservations offered by the American Petroleum Institute and added two of its own amendments. Membership in the pact is open to all nations wishing to take part in the agreement.

Washington oil observers were encouraged by reports from Pittsburgh indicating steel mills were starting to hike production. Carnegie-Illinois Steel Corp. returned to making coke at 100 per cent capacity and put back into operation the equivalent of 5½ blast furnaces, making a total of 18 operating. Normal operations had been interrupted by a miners' protest strike, which has been settled amicably.

The oil industry's worst bottleneck has been the shortage of steel products for oil fields and to replace outmoded refinery equipment.

Have you received your copy?



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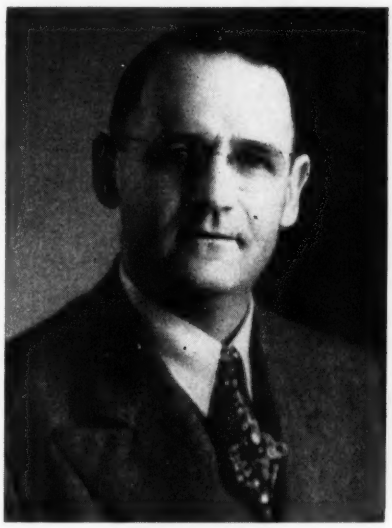
It Can Still Happen Here

On the side and top of South Mountain, overlooking the picturesque town of Santa Paula, and the beautiful Santa Clara Valley is one of the most interesting drilling and producing projects in the State of California. From one of the drilling locations, on a clear day, a person can look west 45 miles and see Santa Barbara Island, look south approximately 100 miles and see Santa Catalina Island, look east over the famous San Fernando Valley, and look northeast and see Castaic and the famous Ridge Route leading into the wonderful San Joaquin Valley.

This project is interesting in several respects. It is an oil-man's dream that has really come true. It is the result of a conviction, the accomplishment and bringing to an end of an undertaking that took a lot of "guts," a lot of planning and the spending of a lot of money to accomplish one thing, and that thing was the production of oil and gas.

The owner and operator of this oil property is F. E. "Free" Fairfield who has cut, whacked and graded roads and drilling locations along the side and on top of South Mountain, so as to reach drilling sites that would look from a glance almost impossible. To reach this property, one crosses the riverbridge south of Santa Paula at an elevation of approximately 70 feet above sea-level and winds ones way over crooked and twisted roads to an elevation of approximately 2300 feet in the short distance of a little over two miles.

Mother Nature, no doubt, spent a lot of time in molding and planning this beautiful and rugged mountain, and placing beneath it fabulous quantities of black gold, but modern road building machinery, such as bull-dozers, road-graders, rippers, etc., has cut permanent scars on this mountain that will remain almost eternally as a monument to man's search for oil. Because of its rugged contours, this area is described as the most scenic of all California oil-fields. One of the canyons leading from this mountain is known as "Little Grand Canyon." The various formations exposed to years of erosion radiate colors that no artist could paint regardless of the brushes and paints that might be at his command. The South Mountain oil-field is the highest producing oil-field above sea-level in the state of California.



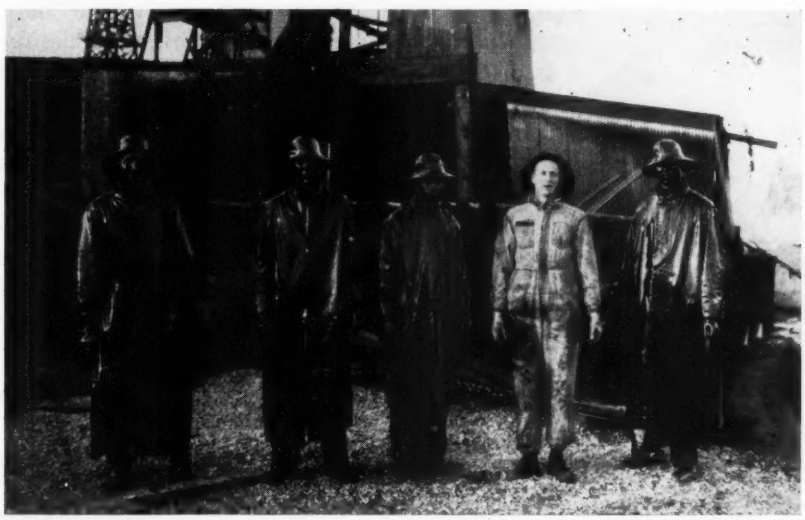
F. E. Fairfield

In the course of this development work, Fairfield has extended the proven limits of South Mountain Field by nearly a mile. His experimental work has made it possible for other operators in the field to extend their operations and to produce millions of barrels of oil that they never dreamed of ten years ago. The Fairfield property under development at South Mountain consists of 590 acres of which 300 acres is considered oil land.

Because of its rugged terrain the present producing eleven wells were drilled from stations or banks and radiate from these stations to locations which would be impossible to drill vertically. Some of these wells have drift-angles up to 38 degress and traverse up to 1800 feet of horizontal distance. These wells are drilled in banks which are located on various parts of the property.

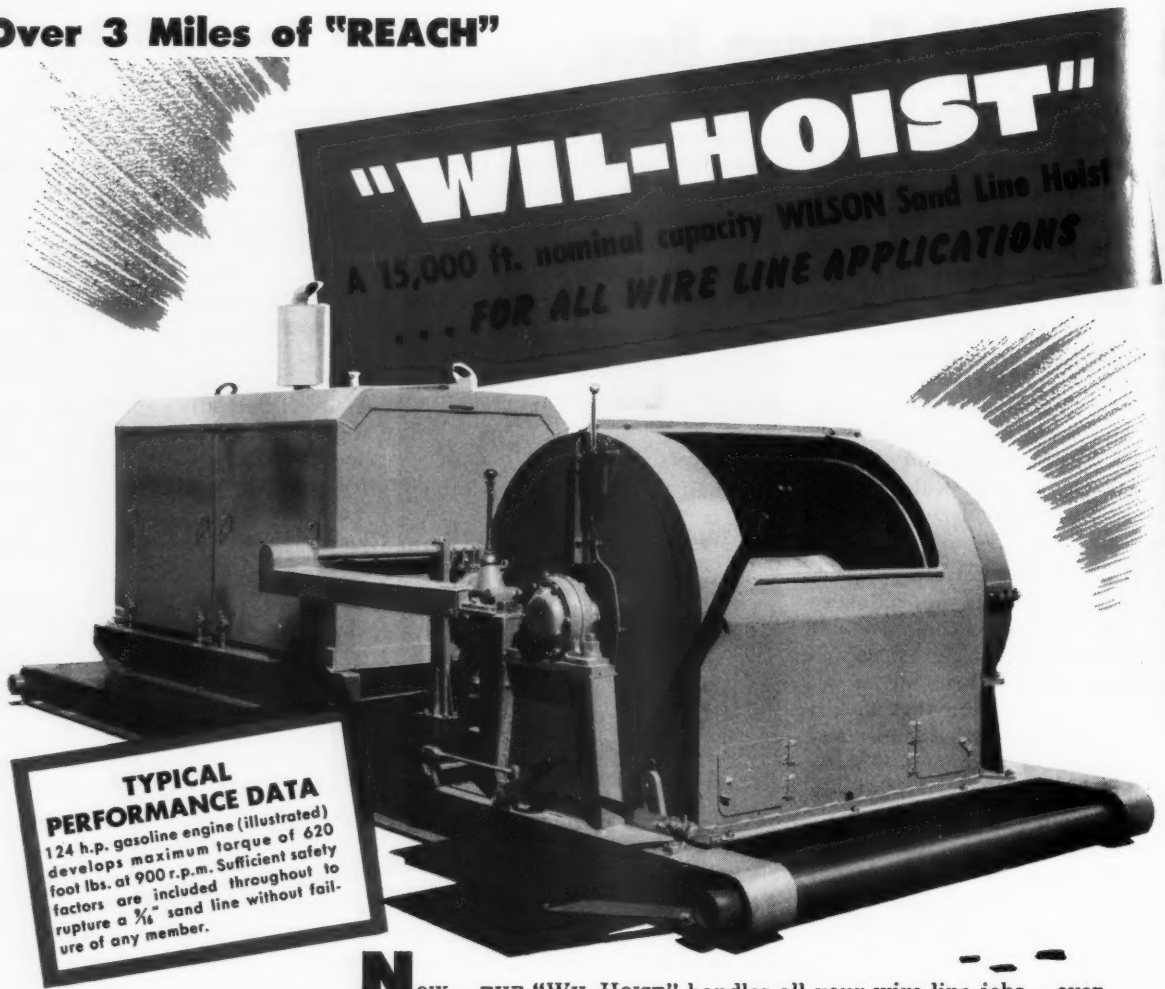
The drillers and roughnecks suggested that drilling could be carried on by hanging the drill-pipe from a four-foot boom planted in the side of the mountain. Even with centralized drilling locations, the grading of roads and locations adds $8,000.00 to $10,000.00 per well to the drilling cost, exclusive of the cost of directional drilling.

The credit and success of this drilling and producing program, according to Fairfield, "belongs to many." He could not say enough about his loyal and capable superintendent, Mr. Ed Lesperance of Fillmore, California; about his conscientious and hard-working road



This picture taken in 1924 shows F. E. Fairfield on the left and Sid Dewey, Eddie Brain, Douglas Gonzella and Mark Teague. This group was working for the O'Kane and Brain Drillling Company on the Jergins Oil Company's No. 14 well at Signal Hill, Calif.

Over 3 Miles of "REACH"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Aerial photo showing development on South Mountain. Shown are banks of pumping units, tanks, drilling well and connecting road.

foreman, Pete Garcia of Piru, California, about his capable drillers and rotary-helpers, about the employees of The Oil Tool Corporation of Long Beach, California, who made it possible for him to have at all times the necessary tools, drilling-rigs, casing, tubing, and perforated pipe, etc., and last but not least, he expressed appreciation for the many favors and cooperation extended to him by The Texas Company and The Union Oil Company, who are his neighbors to the east and north.

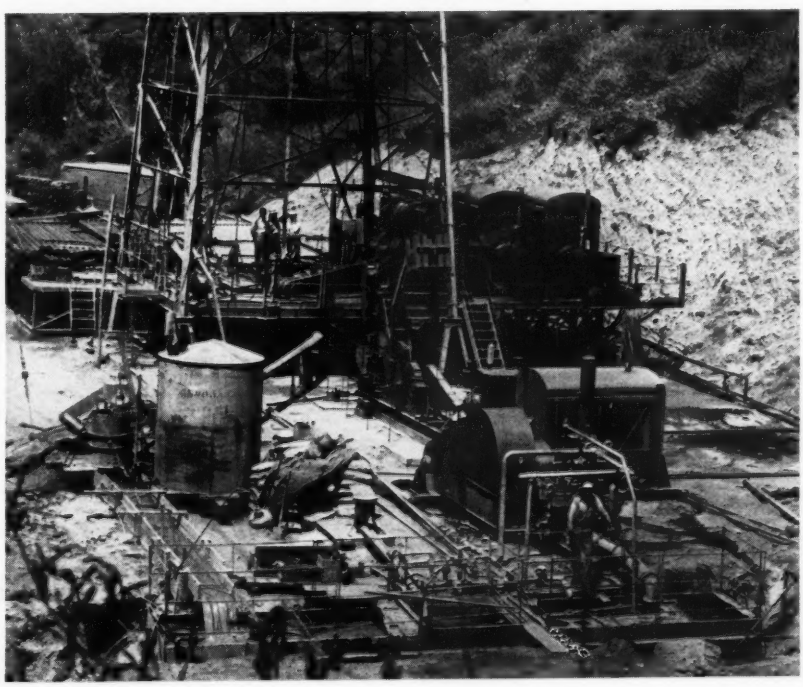
Development started in April of 1944 when Fairfield went in and deepened an unsuccessful shallow-zone test in Sec. 19-T.3N.-R.20W. There was considerable geological opinion against the successful completion of this well. This well was deepened from 2750 feet to 4988 feet and was completed for approximately 200 barrels per day of 22 gravity oil. Since that time, eleven additional wells have been drilled and placed on production with a daily production of approximately 1600 bbls. No edge wells had been drilled on the southeast flank of the South Mountain oil-field for nearly 20 years, and several geological reports had condemned the entire area that is now producing great quantities of oil. Fairfield plans at the present time for 20 additional wells. Nearly all of these wells will be drilled from central locations, 24 feet between well-centers with derricks mounted on rails for convenience in drilling and servicing.

The entire section penetrated by the drill is known as Sespe, usually classified by geologists as Oligocene in age. The type of structure is that of a faulted anticline with the axis trending almost east and west and located in Sections 18 and 19 T. 3N.-R.20W, and Sections 13 and 24 of T.3N.-R.21W.

Some gravel beds are found at shallow depths and numerous volcanics exist throughout the section. It is generally accepted that the Sespe sandstone is not a source-bed, but is a reservoir of accumulation for migrated oil. Its characteristics are that it is a firm, well-cemented sandstone, has fair permeability and wells completed in this formation have a long producing life with no sand trouble.

The sands within the overall producing section are lenticular, no electric-log markers being persistently identifiable throughout the field. In addition, there is considerable minor faulting. Some of the upper sands in higher structural positions carry water, although these waters are not present in flank-structure locations. Bottom water occurs at a depth of plus-minus 3200′ sub-sea.

It is interesting to note that oil development in the Santa Paula area was begun as early as 1880, interest being attracted by surface oil-seeps.



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Here's a case history that makes you wonder if they do:

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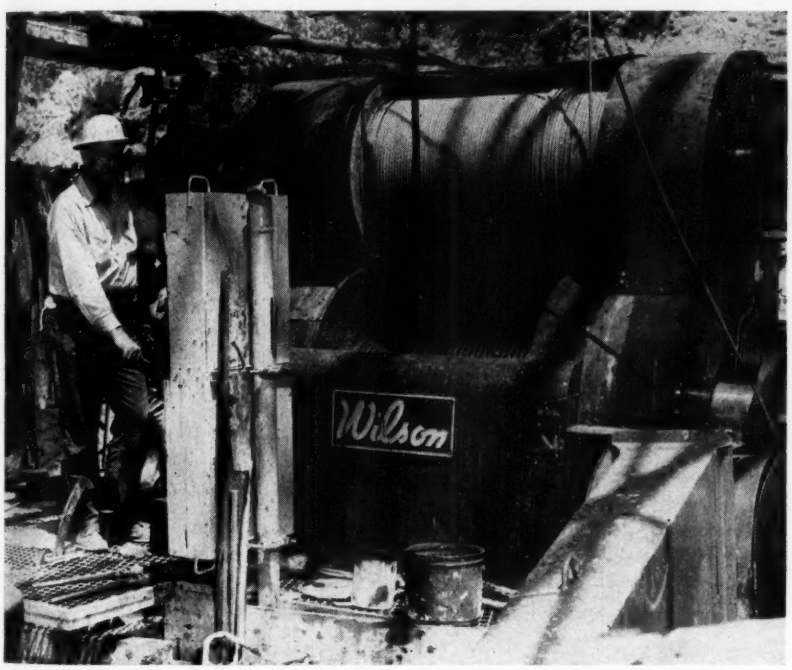
As a result of the Fairfield development, other operators in the field have drilled a total of 16 wells recently in the same zone. Four additional wells are now being drilled and several more are in the planning stage.

The usual practice is to drill a 11 inch and 9⅝ inch hole to the total depth. No coring is done, but in some cases side-wall samples are taken. Electric-log information is accepted as reliable. An average of 38 rock-bits per well is required. No drag-bits are used. Average depth of wells drilled is 5000 feet. Usual drilling time from spud to completion is 29 days which includes 30 to 48 hours rigging-up time and 3 days completion time after running casing. Occasionally trouble from lost-circulation is encountered at depths above 300 feet. Treatment of mud with Fibre Tex is usually effective in regaining circulation.

View from Fairfield lease over lower part of South Mountain and Santa Clara River Valley.

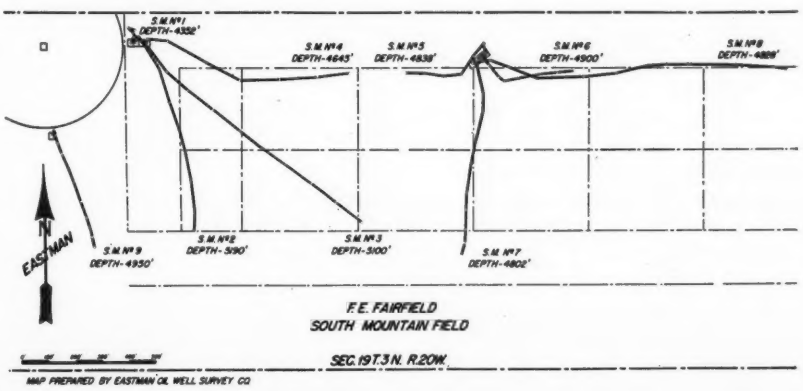


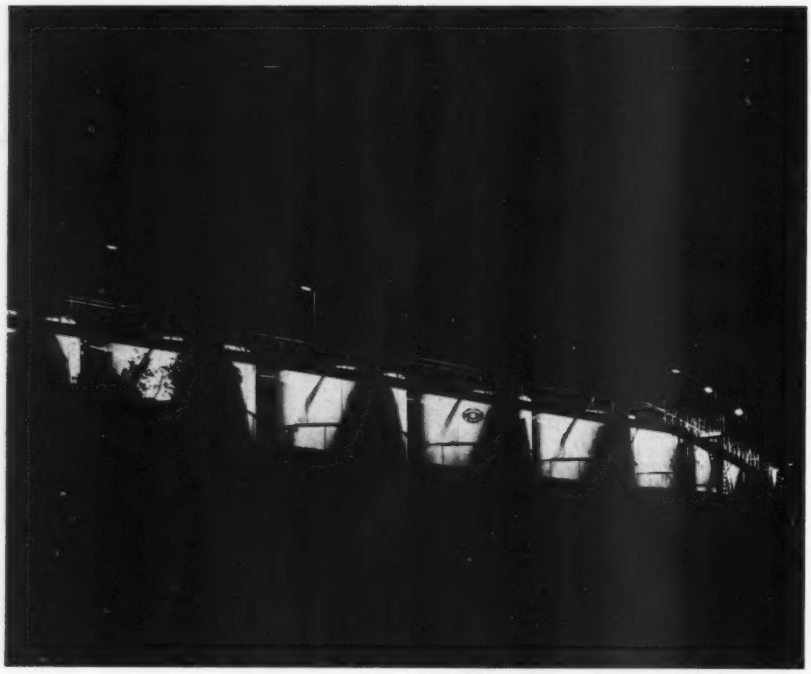
W. T. White, Driller

Seven-inch combination strings are run and cemented through ports at approximately 3000 feet. The shut-off is made in conglomerate above the Sespe Sandstone. The entire string from 3000 feet to 5000 feet is perforated with round-hole perforations. The perforations are washed with salt-water and the wells clean up in 24 to 48 hours after going on the pump. Little water is found in this thick section.

A representative group of oil-field service companies has participated in this development. All casing and tubing run is second-hand pipe reconditioned by The Oil Tool Corporation. All wells are pumped by Jensen pumping units also supplied by The Oil Tool Corporation.

Directional-drilling has been done under the supervision of the Eastman Oil Well Survey Corporation. The Schlumberger Well Surveying Corporation has run the electric-logs. Derricks were erected by the Macco Corporation. Oil-well pumps have been supplied by the Neilson Pump Division of the Oil Well Supply Company and the Axelson Manufacturing Corporation. Sucker rods used are from The National Supply Company and the Axelson Manufac-





Night view of tank battery.

turing Corporation—¾" x 30' size. Tankage is manufactured by the Parkersburg Rig and Reel Company, and is erected by the California Tank Coating Company.

An important part in this campaign has been played by the drilling rig which Fairfield purchased for the purpose. This is a Wilson Streamline Giant Model drilling rig delivered according to specifications by E. W. Forrow of Power Rig and Equipment Company. This rig has established a good record for trouble-free operation since going into service. It is equipped with a 6" drum-shaft, 40" diameter brake rings, Wilson friction clutch, 36" Parkersburg hydromatic brake and is powered by two 390 H.P. Superior-National gas engines. The rated capacity is 7000 feet. This rig is now drilling on South Mountain No. 11 well.

In June, 1946, Fairfield was given credit for the discovery of a new field. This field is known as West Mountain and is approximately one and one-half miles west of the South Mountain oil-field. In April of 1946, Fairfield spudded an exploratory well near the center of Section 23, T.3N.-R.21W. This well is known as Converse-Hill No. 1 and was drilled to a total depth of 5048 feet, and was completed July 1, 1946, for approximately 187 barrels per day of 20 gravity oil.

In this new field there are now 12 completed wells and four drilling wells. Fairfield has six completed wells and is in the process of drilling one at the present time. His holdings consist of 330 acres, all of which are proven. Some of the high structural wells are flowing, and gas-oil ratios are somewhat higher than in the South Mountain field, although little data is available on the gas production. The nature of formations encountered is identically the same as in the South Mountain field.

Other operators interested in the West Mountain field are D. D. Feldman of Texas, the Los Nietos Company, the Union Oil Company of California, and the Ring Oil Company.

In the growth of his company, The Oil Tool Corporation, Fairfield has inspired a high degree of loyalty among all of his employees and those connected with the organization. This loyalty is whole-heartedly reciprocated by Fairfield.

"Free" Fairfield was a roughneck on Signal Hill in 1924 with no more opportunity open to him than the next man. The inset pictures of Fairfield in 1924 and as he is today are proof enough that it is still possible to climb to the top by perseverance and industry.

Goleta Tests Continue Ahead

Honolulu Oil Corp.'s Honolulu-Signal-Goleta Comm. No. 1 in Sec. 24-4n-29w in the Goleta area is standing idle at 6741 ft. Honolulu-Signal-Macco-State No. 308-RDA1- is spot coring at 4940 ft. No. 309-RDA-1 is redrilling at 3083 ft.

Zaca Wildcat Rigging Derrick

In the Zaca area of Santa Barbara County, Tide Water Associated Oil Co. is rigging derrick to start the drill in Luton No. 71 in Sec. 32-8n-31w.

Hopper Canyon Well Nears Test

Failing to recover tubing fish, Commander Oil Co., Ltd., is preparing to test its No. 8F in Sec. 13-4n-19w in the Hopper Canyon field, Ventura County. Contractor is Ivy Drilling Co.

Santa Paula Try Inactive

T. M. Gibson's Tortillo No. 1 in Sec. 26-4n-21w in the Santa Paula Canyon area is idle at 185 ft.

Foxen Canyon Test Deepening

In the Foxen Canyon area of Santa Barbara County, Foxen Ridge Oil Co. is deepening at 4903 ft. Wickenden No. 1 in Sec. 26-4n-21w. Formerly known as Four-Five-Six Oil Co.'s Wickenden No. 1, deepening operations were started at 4606 ft.

West Mountain Active Center

Los Nietos Co. & Lucy Smith Battson's C. and H. No. 4 in Sec. 23-3n-21w in the West Mountain area is drilling at 4206 ft., after an electric log run. D. D. Feldman, Operator, Richardson Estate No. 4 in Sec. 23-3n-21w is going ahead at 4712 ft.

Checking Cement Behind Pipe With Radioactivity Log

The cementing of pipe in an oil well is a very important operation and for this work to be successful, the cement must fill the annulus around the pipe throughout the entire vertical distance it has been determined necessary for it to extend. On primary cement jobs (the cementing of casing or liner immediately after the pipe is run into the well) the actual location of the top of the cement is frequently checked by means of temperature surveys. This can also be done by the use of radioactivity logging when carnotite is mixed with the cement. The method of running a radioactivity log with carnotite cement, however, is particularly adaptable for checking on the location of cement that has been placed by "squeeze cementing." In such cases the radioactivity log will show whether or not the cement has been forced under pressure into the section of the hole behind the pipe where it must go if the work is to be successful.

When checking the location of cement behind the pipe, the gamma ray instrument only is used. By means of the log taken with this instrument after the carnotite cement is in place, the placement and distribution of the cement behind the pipe is readily determined by accentuated anomalies, or "kicks," which are shown on the log. The direct comparison with a gamma ray log taken before the cement is placed (which log records the normal radioactivity conditions of the formations) or with an electrical log upon which the gamma ray curve can be superimposed, will show the accentuated characteristics and provide for interpretation. It has been found, however, that a comparison made with a gamma ray curve that has been run before cementing is more desirable than a comparison with an electrical log.

Carnotite, the material mixed with the cement for such an investigation, is a radioactive mineral. It is rather soft, is canary-yellow in color, and has a specific gravity of 4.1. It is also known as hydrous potassium uranyl vanadate (K_20 $2U_20_3$ V_20_5 $3H_20$) and is used for the production of vanadium, uranium and radium salts. Found as an earthy deposit, it is evidently a secondary mineral derived from some pre-existing minerals.

Carnotite is mined as an ore and ground to powder, even to colloidal size if desired. It is fairly low in cost, the price varying with the amount purchased, and is obtainable in any quantity. Storage does not affect nor deteriorate the mineral in any way so a sufficient supply can be kept on hand if a series of surveys is contemplated.

Because carnotite has such radioactive constituents as potassium and uranium it is easy to understand its usefulnes as a tracer in the cement to determine the vertical limits and the displacement of cement behind the pipe.

Operating Procedure

The use of two gamma ray logs to determine the location of the cement is illustrated by Figure 1. Before the cementing operations are started, the first gamma ray log (Log No. 1 in the drawing) is run to provide a reference curve and to define the formations through which the cement is to extend. This curve is more desirable than an electrical log because shales vary in gamma ray intensities. The carnotite cementing job is them performed.

The first five or six sacks of cement are dumped into the hopper without the addition of carnotite. This allows the water and cement to mix and prepare for the carnotite-cement mixture. Because of the specific gravity of the carnotite this is important since otherwise the carnotite would precipitate before reaching the well. Then one pound of carnotite is added to each succeeding sack of cement. In the case of a squeeze job, the mixture which is squeezed behind the pipe can be followed by neat cement slurry (cement and water without carnotite) without loss to the effectiveness of the radioactivity survey because the slurry will have contacted and deposited a portion of carnotite along the face of the wall in the bore hole. The amount of carnotite employed should be determined by the character of the cementing job and the

Control Panel in Truck Where the Gamma Ray Curve is Recorded.

Looking Around

By THE OBSERVER

GOLD DUST FOR HOOF OIL

Twenty-five miles back of Placerville is a place on the Mother Lode called Omo Ranch. There's a general store there, run by a veteran merchant honored by all who know him—Pat Lalor. He has been a dealer in Standard products for more than 40 years.

Pat's store was originally a trading post, and his customers were mainly Indians. The Sapiago tribesmen used to come in with pine nuts, hand-hewn shingles and gold dust, and swap them for other supplies. Unfortunately, Lo, the poor Injun, used to mix brass filings with his gold, giving Pat great sadness of soul.

The Indians are gone now. Pat's customers are mostly ranchers, lumbermen, miners and tourists these days.

But his store, except for its Chevron Gas Station trimmings, is still something straight out of California's romantic past. There is no electricity. The place is lighted by lamps. A foot-operated lathe stands in one corner; in another, big red and green apothecary bottles, for Pat used to handle druggists' goods, too. He still makes violins and repairs watches and clocks.

Ever since 1904, Pat has been a dealer in Standard of California products. His old-time invoices and receipts show a lively business in such wares as Standard Hoof Oil, Galena Bolt Oil, Star Oil, Beaver Cylinder Oil, Polarine Auto Oils, and Standard Auto Chain Lubricant.

In 1913, we began making deliveries to Pat. We used a Graham chain-drive tank truck. We've been making regular deliveries ever since. We have bigger dealers than Pat, but none more steadfast. May our trucks continue long to stop at his door!

Listen to "The Standard Hour" Sunday evenings at 7:30 over N.B.C. Stations.

STANDARD OF CALIFORNIA

condition of the well. Very good results have been obtained by using approximately one pound per sack of cement, which is about one per cent by weight.

After the cement has hardened and any excess cement remaining inside the casing has been cleaned out, a second gamma ray curve (Log No. 2 in the drawing) is made. This second curve is made with the same intensity as the first one which was made before the cement was placed. By comparing the two curves, the location of the carnotite is readily apparent because of the increased intensity recorded opposite the section containing the carnotite. Where the cement has gathered in pockets or cavities of the formation, the carnotite (in proportion to its mass), will cause strong positive reactions that will result in abnormal "kicks" on the curve. Where there are no pockets of concentration, the higher intensity values shown on the second curve will be comparable, in exaggerated form, to the lower intensity values of the first curve, the higher intensity values of the second curve naturally indicating the presence of the carnotite.

By using the radioactivity logs with carnotite cement not only have the upper and lower extremities of the cement behind the casing been found but also its concentration in relation to the formation has been located. Where difficult completion of an oil well due to problems in cementing is concerned the use of carnotite with radioactivity logging can be a procedure worthy of investigation. The results obtained by such surveys have been very gratifying to date but they can best be illustrated by the records of an actual job.

Typical Example

The two gamma ray curves shown in Figure 1 were taken in a well in which gun perforations previously made were cemented off under pressure. (Squeeze cemented). The curve on the left, Log No. 1, is the record made before the carnotite-cement job was performed and shows the sand in relation to the shale above and below. After Log No. 1 was taken, the previously-shot gun perforations from 8600 to 8606 feet and

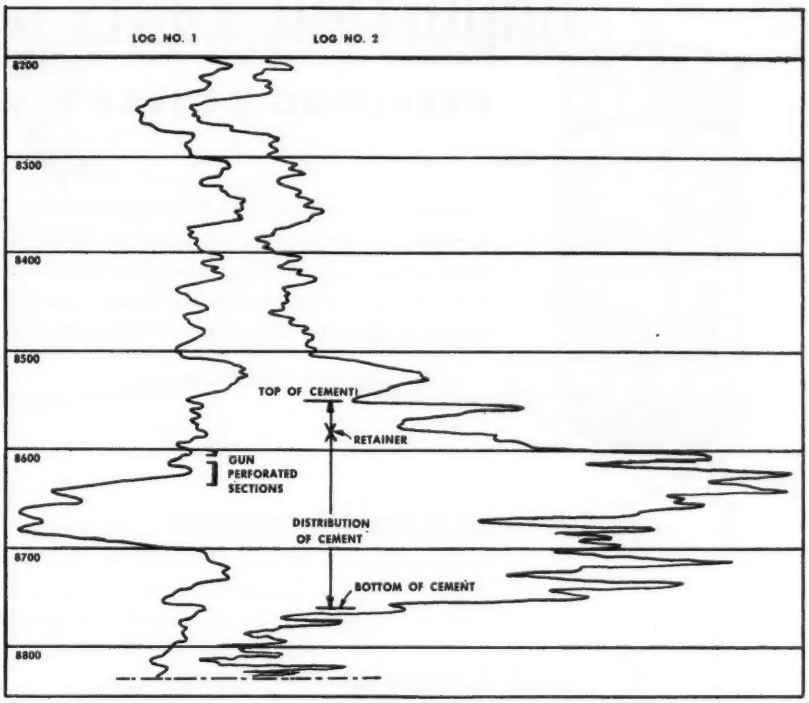


Figure 1

from 8614 to 8637 feet were squeeze cemented.

At the time of the squeeze job, the mud was conditioned and had a weight of 74 lb. per cu. ft. (9.9 lb. per gal) and a viscosity (measured by Marsh funnel) of 40 seconds. The cementing operation was performed through a cement retainer and one meter of water was pumped in ahead of the cement with a maximum pressure of 4700 p.s.i. Carnotite cement was used and the proportions of carnotite to cement were as follows:

No carnotite with the first 5 sacks of cement;

One and one-half pounds of carnotite per sack with the next 35 sacks of cement;

One pound of carnotite per sack with the next 35 sacks of cement.

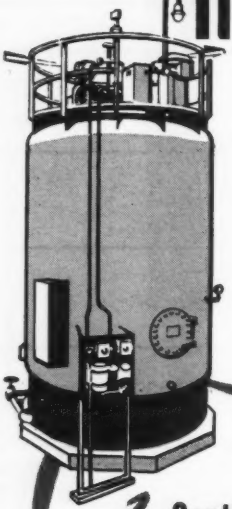
This was followed by the necessary amount of cement mixed without carnotite to finish the job. The maximum pressure required to perform the squeeze cementing operation was 5100 p.s.i.

After waiting 24 hours for the cement to set, the cementing plug was drilled up and the hole put into condition for Log No. 2. The gamma ray curve then taken is shown to the right in Figure 1. By direct comparison and correlation, the discernible top of the cement was found to be at 8550 feet and the bottom at 8760 feet. The entire distribution of cement was found to cover 210 feet, and it is interesting to note that the cement extended 123 feet below the bottom perforation and 50 feet above the top perforation. The greatest concentration was at the perforated zone itself, which was naturally expected. The travel of cement below as well as above the gun perforated zone is of material importance because the same thing occurred on every previous job.

This application of radioactivity logging with carnotite cement appears to have a value in any difficult squeeze job, particularly in a field where there is production from a number of productive sands that lie close to each other. In widely separated productive sands, it is possible to show the extent of vertical distribution of the cement and in multiple zones (where the sands are close together) to show whether the cement covers all the sands that are to be tested for oil or has collected in a pocket or cavity. Although the

(Continued on Page 31)

Important Facts IN GETTING YOUR DESALTING DOLLAR'S WORTH:



The Petreco *Electric* Desalting Process for removing salt from crude oil is made available to petroleum refiners by the Petroleum Rectifying Company. Many years of efficient salt removal have established Petreco's reputation as an effective, dependable process. However, over and above effective salt removal, every Petreco licensee benefits from the following *additional service features—at no extra cost:*

1 Continuing Process Development... Petreco developed the *Electric* Desalting Process to correct an unusually difficult refining problem caused by salty crudes. From the first installation, Petreco has maintained and expanded research and development facilities dedicated to improving this process, and consequently, to better service.

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4 Research to Solve Your Problem... Petreco Research Laboratories carry forward an advanced program dealing with salt removal methods and process improvements. Their facilities are available to any refiner with a desalting problem.

The effectiveness of Petreco Desalting, the efficiency of complete Petreco Service, and the nominal Petreco cost mean continuous added operating profit with a minimum investment. *Avoid the losses possible with less efficient desalting methods.* Plan with Petreco now for profitable desalting.

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PB 47 C

Recent Developments in Casing Standards and Design

By John Wais, Jr.
Pittsburgh Steel Company

During the period from 1941 to the present, almost all proposals for revision of API pipe specifications have been held in abeyance due to the war emergency, while demands for changes resulting from new field requirements have accumulated. As a result, proposed changes that are now in the experimental stage or on the agenda of the Pipe Committee undoubtedly will aid in the solution of some of our more serious casing problems.

Intensive work on thread specifications during the past ten years has resulted in basic standards which are sufficient for normal requirements. However, in order to resist loads and pressures incidental to the drilling of wells to increasing depths, it has become evident that the necessary improvements cannot be accomplished by further changes in thread form or related specifications alone.

The primary objectives of the changes under consideration are:

1. More effective resistance to joint leakage at high pressures.
2. Higher joint strength.

Considerable progress toward accomplishing these objectives has already been made by laboratory developments and field tests on factors such as lubricants, makeup, and joint design.

These developments involve design, manufacturing, and field application, and some of them require additional information from users to permit final decisions. Accordingly, it is the purpose of this paper to review these proposals and developments and to discuss the field requirements that prompted them as well as field problems relating to their full utilization.

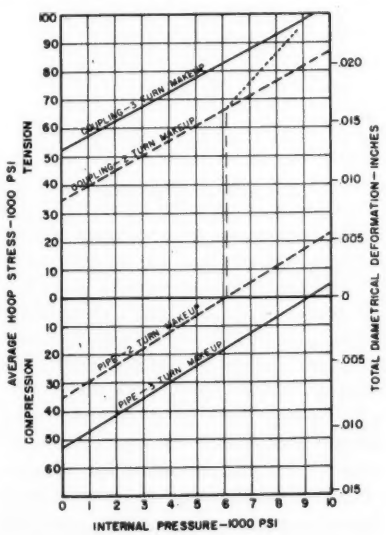
Thread Makeup

Thread makeup has long been recognized as one of the obvious factors affecting leakage. However, its importance became more evident when hydrostatic testing of threaded joints at internal pressures above 5000 p.s.i. was undertaken.

The former practice of using a nominal 2 or 2-½ turn makeup from hand-tight, depending on the size, has resulted in satisfactory resistance to leakage at routine internal hydrostatic test pressures of 3000 p.s.i. maximum. However, supplementary testing to pressures of 5000 to 7000 p.s.i. showed leakers on the order of 25%, as reported by Kettenburg and Schmieder[1].

It was found repeatedly by various experimenters that greater makeup almost invariably reduced this leakage or stopped it entirely. Also, it has been noted repeatedly that joint efficiency reaches an optimum value at slightly more than three turns makeup, and rarely shows any decrease due to excessive makeup until considerably past three turns. Thomas and Bartok[2] showed detailed results of numerous tests of the effect of makeup on both leak resistance and joint efficiency and their results have been checked very closely by several observers.

In recognition of these results the API Pipe Committee increased the hand-tight standoff by one turn, subject to letter ballot. The effect of this action is to allow for one more turn of makeup and it is up to the manufacturer when assembling couplings, and the casing crew when running pipe, to make up the joint the additional turn. To accomplish this will require considerably higher torque and much greater precaution to avoid damage to the pipe or coupling.



AVERAGE HOOP STRESS AT HAND TIGHT PLANE
7" X 29# CASING WITH 7.656" O.D. COUPLING

FIGURE 1

The problems incidental to greater makeup relate primarily to prevention of damage to threads and crushing of pipe. Greater care must be exercised in cleaning threads in order to eliminate all dirt and foreign material that might increase friction and the consequent tendency to gall.

Thread dope must have adequate lubricating properties to eliminate excessive friction under the high surface pressures incidental to the added makeup. The desirable properties of thread lubricants have been discussed at length in other papers but it will bear repeating that such lubricants must contain a sealing agent capable of closing the root and crest clearances as well as the premissible imperfections of the threads. Also, it must offer protection for the threads against corrosion before and after being run into the well.

Tongs must have gripping surfaces of proper size and shape to prevent flattening or notching the the pipe. It has been recognized generally that any damage to the surface of pipe is detrimental, but its real significance became evident in laboratory tests prompted by field service burst failures located about one to two feet above collars, where tonging normally takes place.

Effect of Notching and Flattening

Internal hydrostatic pressure tests were made on N-80 casing with various combinations of flattening and longitudinal notching. The theoretical effect of internal pressure on a flattened tube is to tend to round it out, causing an exaggerated tensile stress at the outside surface of the flattened area due to bending. This effect is further magnified by concentration at the root of any notch in the flattened area.

Test specimens were prepared in a compression testing machine to permit accurate dimensional control. Notching was performed with a single die six inches in length and

ground to a sharp 60° edge. The fully flattened area was approximately six inches in length in all cases.

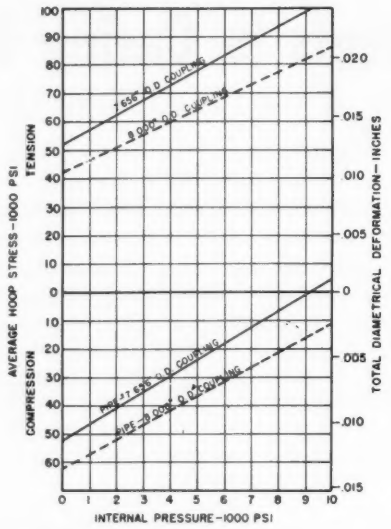
It was found that the critical combination is that of a longitudinal notch located at or near the center of the flattened area. Notches alone up to depth of 12-½% of the wall thickness or flattening alone up to 3% of the outside diameter had no perceptible effect on bursting strength. Notches alone, with depths of 12-½% to 16% of the wall thickness, had very little effect on bursting pressures but failures did begin to localize at the notches.

The critical combination of notching at the axis of the flattened area reduced bursting pressures as much as 70% with notch depths of 15% to 17% of the wall thickness and ovality of 3% to 4%. It is recognized that these deformations are in excess of API allowables, but their practical seriousness becomes more apparent when it is realized that 17% of the wall thickness was only .054" and that 4% of the outside diameter only amounted to .280". Specimens with lower yield strengths resulted in somewhat less sensitivity to the same degree of notching and ovality, but in all cases the reduction was serious enough to be alarming and to justify precautionary measures to avoid combined flat spots and notches in service.

High Pressure Testing

Other important proposals before the API Pipe Committee are those pertaining to hydrostatic pressure testing. Production from deeper zones has led to a demand for internal hydrostatic testing to increasingly higher pressures. An increase of routine test pressure from 3000 to 3300 p.s.i. is under consideration and further information is being developed on this subject. Also there is a proposal under consideration to have all casing tested to produce a fiber stress equal to 80% of the specified minimum yield. It is agreed that hydrostatic testing for only five seconds, as now specified by API standards, serves as a test for the quality of the material but not as an adequate test of joint tightness.

Both proposals have been passed on for further study due to the limitations of existing production line testing equipment and due to the



AVERAGE HOOP STRESS AT HAND TIGHT PLANE
7" X 29# CASING WITH 3 TURN MAKEUP

FIGURE 2

scarcity and limited capacity of equipment capable of continuous operation in excess of 3000 p.s.i.

Both proposals involve radical revisions or renewal of expensive testing equipment. Further information is required from users regarding maximum test pressures required, and time that test pressures are to be held. It is important that accurate and reasonable values be determined in order to obtain the proper economic balance between field requirements and the burden these revisions will impose on the pipe manufacturers.

A special subcommittee on hydrostatic mill tests has been appointed to collect and correlate information to aid in establishing ceiling pressures for both mill production tests and special mill tests, as well as the length of the testing period.

Coupling Stresses

The behavior of coupling under various types of loading has prompted analytical investigation of stresses under high internal pressures. At the outset, it is recognized that the result of any analysis depends on assumptions of conditions for which it is made. In this particular case there is a choice of varying combinations of internal pressure and longitudinal loading, and it is possible that to a certain degree longitudinal loads have the effect of reducing hoop tension due to internal pressure. Also there is the effect of thread flank angle toward expanding the coupling. In view of the complex nature of these secondary effects which tend to offset each other, an approximate analysis is presented based on hoop stress alone.

The effect of making up a joint is to expand the coupling and compress the pipe, which is equivalent to pre-stressing the coupling in tension and the pipe in compression. Then the effect of added internal pressure is to superimpose an expansion on both, with the result that the hoop stresses in the coupling due to makeup and internal pressures are additive.

This condition is shown graphically on Figures 1 and 2 which are based on strain proportional to makeup, starting from the hand-tight position. Actually, a fraction of a turn of power makeup is usually required to eliminate minor variations and bring the threads to "metal to metal" contact, where uniform increase of strain begins. For simplicity, these calculations have been based on coupling and pipe dimensions at the hand-tight plane. The coupling stresses are lower if calculated nearer the end of the pipe and higher if taken nearer the end of the coupling. The theoretical strain and the resulting stress due to makeup are proportioned between the pipe and coupling by the formula for total strain. (See Appendix 1).

The hoop stress due to internal pressure is calculated by Barlow's formula (see Appendix 2). It should be noted that the effective thickness in this application of the formula consists of the combined thickness of pipe and coupling. This is true as long as the two expand together, but tests with strain gages indicate that after hoop compression stress in the pipe is relaxed, the coupling stress increases at a higher rate. The indications are that the pipe does not continue to act with the coupling beyond the point of zero stress in the pipe. Instead the pipe remains relaxed and fluid begins to enter between the pipe and coupling, resulting in all of the hoop load being applied to the coupling at further increased pressures. Such condition is illustrated by the dotted line in Fig. 1, and can be compared with the pipe and coupling acting together as represented by the dashed line.

This may represent the mechanics by which a threaded joint resists leakage. As long as the pipe member is under hoop compression and the thread elements are properly matched, the joint can mechanically resist leakage. It is immediately evident that the higher the makeup stress or the heavier the coupling, the higher the pressure that will be required to exceed these conditions of joint tightness.

For external pressures the initial stresses are the same as for internal pressures. However, as the pressure is applied the tension in the coupling decreases and the compression in the pipe increases. Comparable additive stress values in collapse are generally not critical. This is due to the stress at collapse failure being below the yield strength.

Figure 1 shows the calculated stresses for 7" x 29# casing with standard API 7.656" O.D. couplings with 2 and 3 turn makeup. Even if a half turn is allowed from hand-tight to complete metal to metal contact, it can be seen that with 3 turn makeup and 6000 p.s.i. internal pressure, the hoop stress component alone is very near the minimum yield strength of N-80 couplings, disregarding the complex effect of accompanying longitudinal loads.

Figure 2 shows the theoretical comparison of 7.656" O.D. and 8.000" O.D. coupling on 7" x 29# casing with three turn makeup. It is indicated that the 8.000" O.D. coupling would have considerably lower stresses, and would be comparable to the 7.656" O.D. with only two turns makeup.

The effect of these high hoop stresses has been noted in hydrostatic testing to high internal pressures. Couplings occasionally have been found loose after testing, indicating that some part of the threaded joint had exceeded the elastic limit. This was especially true of N-80 casing equipped with J-55 couplings.

It should be recognized that coupling stress relationships such as indicated by Figures 1 and 2 are more favorable on lighter weights of casing. They are least favorable on 5-½" and 7" casing due to the fact that coupling thicknesses for these two sizes are proportionally less than for the adjacent sizes.

These charts also show that under high internal pressures the total expansion on the diameter (Figure 1) amounts to as much as .020". It is hardly conceivable that this much deformation could be developed without distorting the threads and adding to the tendency to leak. In future test work it appears advisable to investigate possible beneficial effects of reducing total deformation.

It is not the purpose of this paper to recommend a change in coupling dimensions, but the high stresses and strains incidental to high pressure applications indicate that in some instances it may be desirable to increase coupling thickness.

High Strength Casing Joints

The design of high strength joints has been receiving considerable attention from both users and manufacturers. Early developments were centered around the use of internal upsetting to compensate for the metal removed by threading. Later developments have included heat treating, cold working, and combinations of upsetting with the latter two. Conforming to these developments, the API reference to this class of product was changed from "Upset Joint" to "API High Strength Joint" at the 1946 Fall Meeting.

At the beginning the objective of this program was to develop a joint as strong as the body of the pipe, but subsequent field use has indicated that, particularly in the larger sizes, somewhat lower joint strength is sufficient and more practical from the standpoints of clearances and ease of manufacture.

A tabulation of joint strength data suitable for publication for informational purposes has been developed and approved by the API Pipe Committee. This list will serve as a working basis to aid in development of a final specification and therefore it is important that every prospective user examine it critically as soon as it is published.

For the present this program has been limited to four sizes—5-½", 7", 8-⅝" and 9-⅝". These are listed in J-55 and N-80 grades with both short and long threads and in both upset and not upset treated types. Coupling dimensions remain the same but physical properties have not been specified, thereby permitting the use of any coupling physical properties which prove to be necessary to develop the desired joint strength. Pipe ends may be cold worked, heat treated, or otherwise processed to increase the physical properties of the steel at the joint, thus allowing as much leeway as possible for further development. The upset dimensions for each size casing have been set tentatively to permit passage of the drift specified for the corresponding size and weight of non-upset casing in order to minimize restriction at the joint.

Appendix 1

Derivation of Average Hoop Stresses in Pipe and Couplings (Disregarding Effect of Longitudinal Loads).

Nomenclature:

l = Circumference on centerline.
d = Tangential Total Strain.
D = Outside Diameter.
P = Tangential Load (Hoop Load).
p = Internal Pressure p.s.i.
t = Wall Thickness.
A = Area per unit length.
S = Hoop stress.
E = Modulus of Elasticity.
Subscript "p" refers to pipe.
Subscript "c" refers to coupling.
Subscript "Tot" refers to sum of pipe and coupling values for the element involved.

Stresses Due to Makeup are based on the formula for total strain

$$d = \frac{Pl}{AE}$$

and the assumption that makeup causes constant deformation of the pipe and coupling, such that

$$d_c + d_p = d_{Tot} = (\text{Taper per turn}) \times (\text{Turns makeup}) \times \pi$$

$$d_c = \frac{P_c l_c}{A_c E} = \frac{P_c l_c}{t_c E}$$

$$d_p = \frac{P_p l_p}{A_p E} = \frac{P_p l_p}{t_p E}$$

$$P_c = P_p = \frac{d_c t_c E}{l_c} = \frac{d_p t_p E}{l_p}$$

$$d_c = \frac{d_p t_p E l_c}{l_p t_c E}$$

$$d_p = d_{Tot} - d_c$$

(Continued on Page 31)

Personalities IN THE NEWS

Republic Supply Makes Five New Appointments to Board of Directors

In five of the men shown, whose appointments have recently been announced, the Republic Supply Company of California brings to its Board of Directors a wealth of varied experience and a fresh and vigorous progressive viewpoint.

H. M. Giller, with twelve years in different field stores and the Los Angeles office, has a broad, yet thorough, knowledge of Republic's business. Formerly Manager of Purchases, "Hud" had also recently been appointed Manager of Stores.

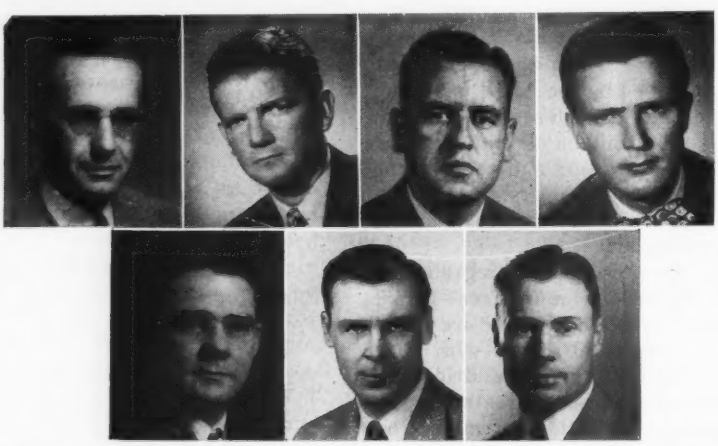
After service in the Navy, M. D. Jayred returned to Republic as a salesman in the Los Angeles area. An additional appointment for "Mac" is that of Sales Manager of the Oilfield Division.

Another Navy veteran is Roy W. Johnson, who came back to Republic after the war, and is now Vice President of the Company, in charge of the Oakland and Fresno stores.

C. E. Schriber has had experience in many different capacities with Republic. Service in the Army Air Forces during the war interrupted Charlie's work with Republic where he is now Manager of Purchases.

R. L. Temple, whose many years of sales brought him up to sales Manager of Industrial Sales, is the fifth of Republic's new Board members, completing an exceptionally capable and well-balanced group.

Announced also are the appointment as Purchasing Agent of C. B. (Chuck) Williams. who represented Republic in the Taft area before his Navy service, and the appointment of R. E. Deshon as Manager of the Quotation and Order Departments. "Bob" has been with Republic for some years, and was at the Oakland store when the Army claimed him for war service.



Top, left to right: H. M. Giller, M. D. Jayred, Roy W. Johnson, and C. E. Schriber. Below: R. L. Temple, C. B. Williams and R. E. Deshon.

Lambertson Heads Valves & Fittings Dept. of Howard Supply

George W. Lambertson, manager of the Valves and Fittings Department of Howard Supply Company, is one of the best grounded men in the business.

A graduate of the Engineering School at Carnegie Institute of Technology, Lambertson attended the Crane Company student training course in Chicago before going to work for that concern's local office. After three years with Crane, Lambertson entered the service where he spent four years as a Major in the Corps of Engineers, Pacific Theater of Operations and "wound up" as Air Engineer for the Seventh Fighter Command at Iwo Jima.

George W. Lambertson

Lambertson has supplemented his Carnegie Tech education with graduate work in Petroleum Engineering at the University of Southern California.

Montrose Joins Hughes Tool

Appointment of M. E. Montrose to the executive staff of Hughes Tool Company was announced recently by Fred W. Ayres, senior vice-president and managing director.

Mr. (Monty) Montrose, well known throughout the oil world, joins Hughes Tool Company, Houston, Texas with 27 years of successful sales, engineering, manufacturing, and executive experience.

After thirteen years with General

Electric Company, most of them in the Southwest, specializing in oil-well drilling and production activities, he resigned to accept an executive position with Lane Wells Company in Oklahoma when that large oil-well servicing organization was first started. Moving to Houston as district manager in 1938 he was shortly elected director and vice-president in charge of all services and sales with headquarters in Los Angeles.

For the past two years he has been director, president, and general manager of Marion Power Shovel Company in Marion, Ohio, builders of the world's largest shovels and drag lines for construction and mining operations.

Mr. Montrose has been active in Nomads, American Petroleum Institute, American Institute of Mining Engineers, American Association of Petroleum Geologists, Petroleum Equipment Suppliers Association, and other associated groups in the mining and petroleum industry.

He has assumed executive duties under Mr. Ayers with headquarters in Houston, Texas.

Oil Base, Inc., Announces Two Appointments

Oil Base, Inc., Los Angeles, announces the appointment of Doyne L. Wilson as Director of Research, and Robert M. Edwards, Mud Engineer for Coastal California. Wilson comes from Visco Products Co., Inc., Houston, where he served as Assistant Chief Chemist, specializing in research, development and application of organic chemicals in the production and processing of crude oils in almost all producing oil fields in the United States. He will direct research and control laboratories on present and new products for Oil Base, Inc., at Los Angeles.

Robert Edwards comes from Baroid Sales Division where he served as mud engineer in the Oklahoma, West Texas and Rocky Mountain areas. Prior to that he was four years with the Army Air Corps during the war. He is an alumnus of Tulsa University. Edwards will be stationed at the company's headquarters in Ventura, California.

M. W. "Monk" Cook Goes to Near East

M. W. "Monk" Cook has been appointed Near East Sales and Service Representative for Security Engineering Co., Inc., International Derrick and Equipment Company, Byron Jackson Company, Chiksan Export Company, Patterson-Ballagh and Falcon Products. He is going to Cairo, Egypt, via London, England, and will service all the oil companies in the Near East from headquarters at Baghdad or Busra, Iraq. Many years practical oil field experience as toolpusher, driller and cementing company salesman and executive in California, Oklahoma and Texas as well as operating formation tester and cementing equipment abroad for the Iraq Petroleum Company eminently qualify "Monk" for his new duties.

The Huntington Beach American Legion bowling team, of which Charles Murdy and Harry Meyer of Signal Oil & Gas Co. were members, won 12th place in its division of the American Bowling Congress.

Gene McIntyre Represents Tapecoat Company

The Tapecoat Company, Evanston, Illinois, announces the appointment of James E. Mavor, 514 M & M Building, Houston 2, Texas, and Gene McIntyre, 727 West 7th Street, Los Angeles 14, Calif., to represent Tapecoat pipe joint protection material.

According to the announcement, Mr. Mavor will handle distribution of Tapecoat in the mid-continent field through his own representatives, F. P. Kelly, covering Louisiana and East Texas, and Bob Lingle at Corpus Christi. Mr. McIntyre will cover California, Washington, Oregon, Nevada and Arizona.

George Farnum of Sunray Oil Corp. refinery at Santa Maria is one of the lucky motorists with a new car. He is sporting a new cream colored Dodge.

The east side of Lake Henshaw is a fisherman's paradise, according to Gene Stotts of Texaco's Wilmington plant. He claims you can catch a string of bass there each averaging more than four pounds.

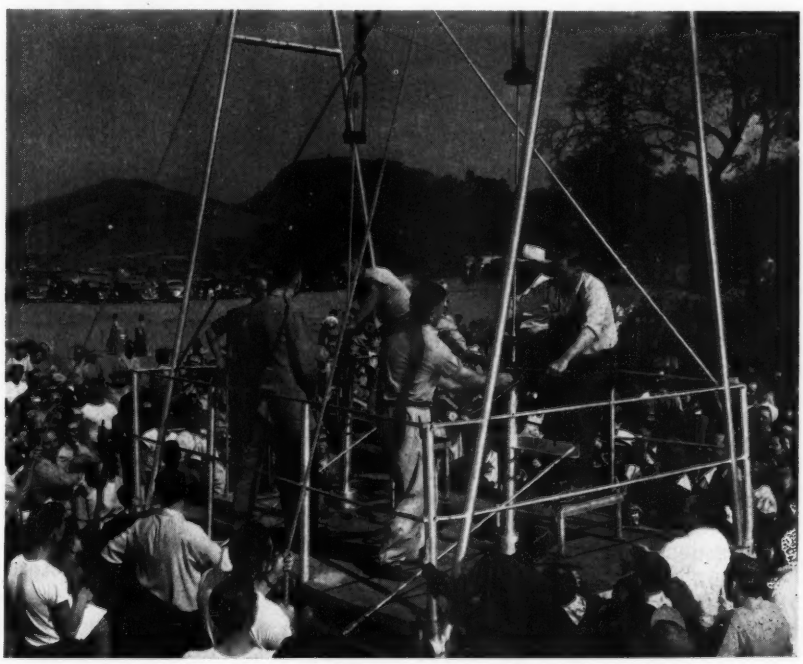


Photo taken at the Annual Barbecue of the Union Oil Company. Considerable interest was shown in the rod wrenching contest. In this contest a replica of two shallow wells was erected and two contestants competed against each other and time, in pulling out five 6' pony rods and running back the same. This contest was won by Everett Ingram of Dominguez in 2 minutes and 7.3 seconds.

J. E. Gosline

J. H. Thacher, Jr.

W. C. Johnson

Standard Announces Executive Changes

Appointment of J. E. Gosline as assistant general manager of its Producing Department was announced recently by Standard of California.

Gosline has been manager of the Producing Department, Southern District since 1943. The son of an oil industry pioneer, he came to work with Standard in 1933 after taking an engineering doctorate at the University of California. After a few months in the company's general engineering department Gosline was appointed a petroleum engineer in the producing department. He is president of the Petroleum Production Pioneers.

J. H. Thacher, manager of Standard's Gas Division of the Producing Department since 1945, will take over Gosline's former position in Southern California. Thacher has been with Standard since his graduation from Princeton University in 1930, when he was employed as a petroleum engineer. During the war Thacher served as special assistant to the Deputy Petroleum Administrator of the Petroleum Administration for War.

Other appointments in Standard's Producing Department announced today include those of W. C. Johnson, who becomes general superintendent of Producing Department, Southern District, and R. E. Clarke, who succeeds Thacher as manager of the gas division of the Producing Department.

R. E. Clarke

Johnson, formerly Superintendent of Operations, Southern District, has been with Standard since 1916. He is a graduate of the California School of Mechanical Arts.

Clarke has been with the Gas Division of the Producing Department for the last seven years, and has served as assistant manager since 1945. He started with Standard after graduation from Stanford University in 1932.

Ashley DeWitt, oil producer and contract driller, is among those spending vacations at Lake Arrowhead, enjoying the salubrious mountain breezes.

Donald M. Smith, petroleum consultant, has announced removal of his offices from Atlantic Avenue to 729 East Willow Street, Long Beach 6. He retains the same telephone number—Long Beach 495-16.

Ward B. Blodget, one of the California oil industry's favorite sons, is identified with the Karda Corp. of Los Angeles, which was organized to carry on rehabilitation work in the Santa Maria field.

Janet Barker, chief stewardess at Los Angeles Municipal Airport, has resigned her position to prepare for a journey to Umiat, Alaska, where she will become the bride of Donald R. Meek, oil geologist and engineer for the Government.

J. A. C. (Cliff) White, whose service with Shell Oil Co. on the Pacific Coast dates back to November 19, 1909, has retired. He was on hand at every major Shell field during its initial development. White and Mrs. White are on an extended trip through Canada and United States. They make their home at Long Beach.

R. B. Watkins, Long Beach oil man, is engaged in an extensive leasing campaign in the Panorama Hills area, San Luis Obispo County. Watkins at one time was with Shell Oil Co.

Baird Advanced by National

A. W. Baird who has been Assistant Purchasing Agent of The National Supply Company since 1944, has been appointed to the position of Purchasing Agent for the Company's Spang-Chalfant Division.

A. W. Baird

Announcement of the promotion was made recently by H. E. Cooley, Director of Purchases of The National Supply Company. J. M. Taylor, who has been in the Purchasing Department of the Company since 1945, has been appointed Assistant Purchasing Agent of the Spang-Chalfant Division.

Mr. Baird started with National Supply at the Ambridge plant in 1927.

Lawrence (Bud) Taylor, assistant compounder for Hancock Oil Co. in the Los Angeles lube plant, in his earlier days won considerable acclaim on the baseball diamond. But at one time was with the Brooklyn Dodgers. He also played with Santa Barbara in the California State League.

Commander William G. Greenman, head of the Navy's petroleum division, accompanied by Captain Victor H. Wilhelm, inspector of California Naval Petroleum Reserves, recently completed a tour of fields in this state. Following his California visit, Commodore Greenman left for Alaska and the Navy's oil reserve near Point Barrow.

Goble Heads Kelite Activities in Atlantic States

The interests in the Atlantic States of Kelite Products, Inc., manufacturers of industrial chemicals for cleaning and processing, were taken over by Kelite Products Company of Flushing, New York, under the direction of Mr. Gene Goble. As President and General Manager of Goble Aircraft Specialties, Inc., Mr. Goble is widely known throughout the East as a manufacturer of interior trimmings for luxury airliners, aircraft engine parts, and instruments and tools. A resident of Garden City, New York, he is Vice-President of the Kiwanis Club of the New York airport, and a member of the Wings Club and the Admirals Club.

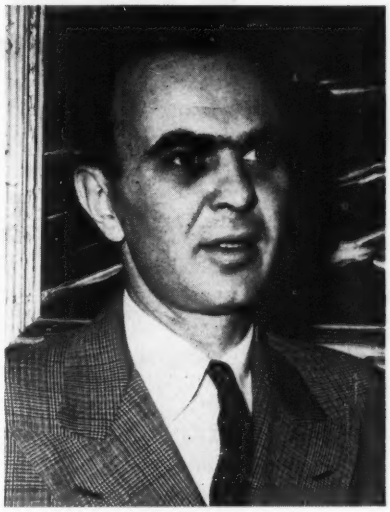
At present, the organization consists of fifty trained sales and service personnel. This will be expanded to take care of Kelite's rapidly growing interests on the Atlantic seaboard. Complete stocks of Kelite materials are now on hand, and the Flushing, New York office of Kelite Products Company now has all facilities available to service present and prospective Kelite accounts in the Atlantic States.

Anderson Elected Vice Pres. of Thermoid

Announcement of the election of Harold C. Anderson as Vice President of Research Engineering and Development of the Thermoid Company has been made by Fred E. Schluter, President of the firm following a recent meeting of the Board of Directors.

A graduate of the engineering school at Iowa State College, Anderson joined Thermoid in November, 1945, at that time taking charge of development phases of the company's new rubber program. In April of 1946 he assumed complete charge of all company research engineering and development. During this time he was responsible for several major developments in Thermoid's automotive, industrial, oil field and textile products.

Prior to his coming with Thermoid, Anderson had been associated with the Flintkote Company at Assistant General Manager for industrial products. Previously he had held important positions with both the Chrysler and Ford organizations in research engineering and development capacities.



Harold C. Anderson

Commenting on the appointment, President Schluter stated: "Thermoid's broad plans for expansion, the diversity of its products and the decentralization of its production necessitated the addition to the Board of competent research engineering counsel. Mr. Anderson was selected because of his wide experience in the industrial and automotive fields, and we regard his election to the new post as an important addition to Thermoid's top management."

Harold Pauley, vice president of Petrol Corp. has left Los Angeles by private plane for San Francisco. There he will board a United Airlines mainliner en route to Honolulu. He will spend a month on Coconut Island.

Doug Graham, Dan Dunlap and George Hocking have organized the Rapid Production Service Co. at Long Beach. It will conduct an oil well servicing and shallow well drilling business.

Ileff Anderson, formerly geologist for Pure Oil Co. in Bakersfield, has joined Chanslor-Canfield Midway Oil Co. in Los Angeles in a similar post.

Field Development

PREPARED FROM CALIFORNIA OIL WORLD NEWS SERVICE

Los Angeles Basin

Petrol Corp. Enters Alondra

Petrol Corp. is starting a program of two wells in the Alondra area. They are School House No. 1 and No. 2 in Sec. 22-3s-14w near Compton Blvd. and Cerise Ave. H. C. Christie is drilling at 9023 ft. with Johnson No. 1 in Sec. 22. Cleveland Oil Co. has location in the section for Gardena No. 15. British-American Oil Prod. Co. is redrilling at 6842 ft. with Park Community No. 1.

Del Valle Try Listed

One mile north of the west edge of the Del Valle field, Texas Co. has location staked for Malis No. 1 in Sec. 10-4n-17w. R. E. Havenstrite's Lincoln No. 15, a deep test in the field proper, cemented frozen 5 9/16-in. pipe at 10,336 ft. Total depth is 12,868 ft. Barnes No. 9 is a rig.

Las Llajas Test Scene

About six miles southwest of Newhall, Tide Water Associated Oil Co. is starting work on Joughin No. 1, an exploratory project in Sec. 25-3n-17w in Las Llajas area, Los Angeles County. Drill site is two miles south of where Standard of California's Brady Estate No. 2-1A explored without success to 9575 ft. and was abandoned two years ago.

Newhall-Potrero Project Drills

General Exploration Co.'s Ferguson No. 3 in Sec. 36-4n-17w is drilling on down below 7200 ft. A Schlumberger is about to be run for correlation of the upper zone.

Torrance Job Abandoning

R. W. (Rocky) Jerman has abandoned at a redrilled depth of 5790 ft. his Torrance No. 1 in Sec. 14-4s-14w in the Torrance field. On formation test of 5500 and 5790 ft. recovery was mud and water and no oil. Total depth is 5796 ft. and redrilled bottom 5790 ft.

Riverside Well Idle

Near Temecula, Palomar Petroleum Co.'s Tyrell No. 1 in Sec. 13-8s-1w, in Riverside County is idle at 2720 ft.

Orange County Wildcat Quits

Near Corona Del Mar in Orange County, Morton and Sons has given up Irvine No. 55-1 at 9427 ft. Nothing of interest was reported on the way down.

Seal Beach Try Shut In

Marine Exploration Co.'s State No. 1 in Sec. 11-5s-12w, whipstocked offshore from South Seal Beach, has been shut in, after flowing considerable gas from an interval between 7720 and 7996 ft. The project showed no oil on test and it may be drawing from a gas cap.

West Newport Test Drilling

Amerada Petroleum Corp. is drilling at 755 ft. with Farnsworth No. 36-7 in Sec. 7-6s-10w in the West Newport area. California Exploration Co.'s Cagney No. 1 in Sec. 28-6s-10w is pumping to sump an unestimated amount of heavy crude. Total depth is 2511 ft., with plug at 1604 ft.

Inglewood Test Logs

Electric log is running in Basin Oil Co.'s City of Inglewood No. 1 in Sec. 28-2s-14w in the Inglewood area. Total depth is 10,515 ft. Location for Inglewood Comm. No. 2-1 has been made in the section.

West Newport Test Spudding

Republic Operators, Inc., is preparing to spud Newland No. 1, a wildcat test in Sec. 12-6s-11w in the West Newport area, Orange County.

Lawndale Try Deep

Drilling evidently is continuing at a normal pace in Seaboard Oil Co.'s Johnson No. 1 in Sec. 17-3s-14w in the Lawndale area, with present depth probably near 8200 ft. The company is releasing no details on developments at this location.

Athens Test Now Reaming

Shell Oil Co.'s Union-Poindexter No. 1 in Sec. 12-3s-14w in the Athens area, which gives promise of ending up satisfactorily, is reaming, after okay on water shut on 7-in. pipe at 8882 ft. Total depth is 9272 ft.

Del Valle Test Cores

Standard of California's Boobier No. 1 in Sec. 15-4n-17w in the Del Valle area is spot coring at 8627 ft.

Simi Try In View

Union Oil Co. is about to spud Simi No. 9 in Sec. 18-3n-17w in the Simi area of Los Angeles County.

Los Angeles Field Active

In the East Los Angeles area, Richfield Oil Corp. is drilling North Side No. 1 in Sec. 7-2s-12w below 1850 ft. Vail No. 3 in Sec. 16 is grading ground. Edison No. 2 in Sec. 16 is reaming, after approval water shut at 8600 ft. Total depth is 8837 ft.

Wilmington Drill Program

Cleveland Oil Co., which recently completed a drilling program in the Mountain View field, is returning to the Wilmington townlot area. It has blocked up solidly 10 community leases totaling 60 acres. They are bounded by Fries, Broad, Q and Lomita Streets. The company plans to drill 10 wells on the property.

Beach City Job Planned

Guarantee Oil Co., Charles Behr, president, is planning to drill Behr No. 1 on the southwest corner of 20th St. and Orange Ave. in the Huntington Beach field.

Ramona Well Rigging Pump

Pump is being rigged to Superior Oil Co.'s Black No. 7 in Sec. 13-4n-18w in the Ramona field. Total depth is 4500 ft., with casing set at 3520 ft.

On the financial side, the company for the first nine months ended May 31, 1947, reported net profit of $4,464,786, equal to $10.55 a share on 423,104 shares of capital stock outstanding.

Net income for the corresponding interval ended May 31, 1946, was $847,406, equal to $2 a share on a comparable basis.

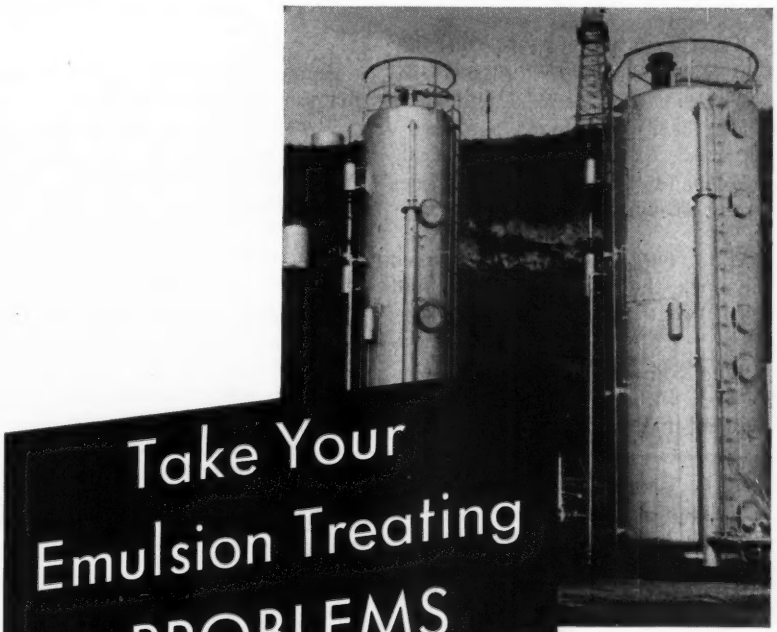
Gross income was $25,438,198 against $17,597,329 for the preceding period.

Long Beach Well Tests

On the southeastern flank of the Signal Hill field, Shell Oil Co. is running tubing to test its Dolley No. 2 in Sec. 29-4s-12w, which is bottomed at 10,544 ft. All sorts of rumors as to what the project has shown to date await official confirmation. The well is in the "no dope" category. The 7-in. casing is set at 10,030 ft.

Richfield Job Quits

L. M. Lockhart's Budlong No. 1 in Sec. 34-3s-9w in the Richfield field, Orange County, has been abandoned at 6302 ft. in gray sand.



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LAUGH THIS OFF!!

She has an ermine coat, a foreign car,
A ten room flat with a built-in bar
And she does it all on thirty per—
Believe it, that's the truth, dear sir,
Yet five years back some teaching hick,
Flunked this gal in arithmetic!

Boss: You can't ask for a raise like that. You must work yourself up.

Salesman: I did, I'm trembling all-over.

Husband: When anything goes wrong around the house. I always fix it.

Wife: Oh, yeah? Since you fixed the clock, the cuckoo backs out and asks "What time is it?"

"Did you fish with flies?"

"Fish with flies? Yes, we fished, camped, dined, and slept with them.

"Who is on the phone?"

"It seems to be some woman; all can hear her say is 'idiot'."

"I'll answer it; it must be my wife."

"Silly girl, cutting off your nose to spite your face."

The reporter was interviewing the castaway soldier who had finally gotten back to the states after three years:

"And you and this lovely South Seas maid lived alone on the island for three years?"

"Naw! Just for the first week."

A mother received a letter from her son, who is in the Navy:

"Dear Ma: I joined the Navy because I admired the way the ships were kept so clean and tidy. But I never knew until this week who keeps them so clean and tidy.—Love, Junior."

The dear vicar's wife had just died, and wishing to be relieved of his duties for the week-end, he sent the following message to his bishop:

"I regret to inform you that my wife has just died, and would be obliged if you could send me a substitute for the week-end."

Two college presidents were discussing what they'd like to do when they retired. "I'd like to be superintendent of an orphans' home—no letters from parents," said one.

The other suggested: "Why not be a penitentiary warden? The dog-gone alumni don't insist on coming back."

If little Red Riding Hood lived today
The modern girl would scorn her.
She only had to meet one wolf,
Not one on every corner.

There's something about the brotherhood of man. During a recent cold spell a man who resides in the suburbs had trouble with his car and at midnight had failed to arrive home. Frantic, his wife sent wires to six closest friends, asking as to poor hubby's whereabouts. The next morning she received six wires: "John is spending the night with me."

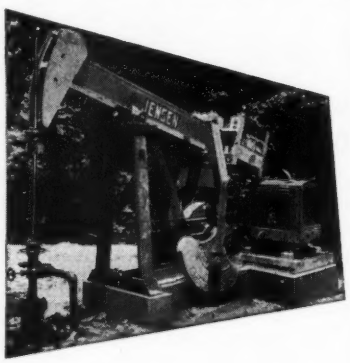
She: How about giving me a diamond bracelet?

He: My dear, extenuating circumstances perforce me to preclude you from such a bauble of extravagance.

She: I don't get it.

He: That's what I just said.

Blue Chip— for **PRODUCERS**



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Temblor
Try Starts

Approximately one-half mile north of the Temblor field in Kern County, Signal Oil & Gas Co. is starting Westates No. 88 in Sec. 35-29s-20e. The company is grading location for Signal-Honolulu-Carpenter No. 2 in Sec. 6-29s-19e in the McDonald Anticline area.

Jasmine
Test Scene

Quinn Ranch Oil Co. is preparing to start Quinn Ranch No. 1 in Sec. 15-25s-27e of the Jasmine area, where Pacific Oil & Gas Development Corp. has several producing wells. Production will be sought in the Eocene formation. The ranch spreads over 8000 acres and is owned by John R. Quinn, Los Angeles County tax assessor.

Poso Creek
Test Rigs Up

Westates Petroleum Corp is rigging up to start the drill in its Davidson No. 1 in Sec. 36-27s-27e in the Poso Creek area. It is northeast of the Kern Front field and one-half mile southeast of Standard of California's Davidson No. 8-5, which was abandoned three years ago, after finding the Vedder gray and barren.

Sand Hills
Try Deeper

In the Sand Hills area of Kern County, Western Gulf Oil Co. is drilling ahead at 13,738 ft. with S. P. No. 1 in Sec. 25-12n-20w. In the Arvin area, Di Giorgio No. 2 in Sec. 10-31s-29e is making hole ahead in schist at 5860 ft.

Cymric Area
Adds Discovery

Rothschild - Bender Oil Operations' Sheep Springs No. 8 in Sec. 17-29s-21e in the Cymric area has found new gas supplies. The well was completed flowing in excess of 20,000,000 cubic ft. of gas a day, showing no condensate. The Oceanic zone is open between 4810 and 4840 ft. Total depth is 4906 ft.

As a result of the discovery, the company has decided to redrill and whipstock Anderson No. 4 in Sec. 20-29s-21e and attempt to pick up the new zone found in Sheep Springs No. 8. Anderson No. 4 went originally to 5277 ft. On redrill the project tested wet.

Independent Exploration Co.'s nearby Cymric No. 11 in Sec. 21-29s-21e is about to complete at a total depth of 4923 ft. Oceanic oil sand was cored from 4847 to 4910 ft. Roco No. 11 in Sec. 18 is coring at 2550 ft. in oil sand. The top Carneros was placed at 2470 ft. on drilling break.

Paloma Well
Still Flows

General Petroleum Corp.'s newest well in the Paloma field, Tupman No. 18-36, at last reports was flow-

STOP THAT LEAK

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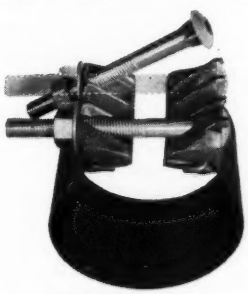
Pipe Repair Clamps



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ing at the rate of 142 barrels of 28.5 gravity crude a day, cutting 52 per cent. Gas yield was 200,000 cubic feet daily. The project is a northeast extension test.

McVan Try Suspended

Republic Operators, Inc., Carter No. 1 in Sec. 7-27s-27e in the McVan area has reached a depth of 2908 ft. where drilling has been temporarily suspended.

Poso Creek Job Grading

General Drilling Co. is grading ground for its Fitzhugh-USL No. 2 in Sec. 14-27s-27e in the Poso Creek area. The venture is not a great distance from established shallow production.

Coalinga Well Now On Gas Lift

Sharples Oil Corp.'s Hyde No. 1, a discovery well in Sec. 6-19s-16e in the Northeast Coalinga area, when last reported made 130 barrels in 18 hours on the gas lift, cutting 30 per cent. One mile southwest, Standard of California has staked location for Mitchem No. 58-12A in Sec. 12-19s-15e.

McKittrick Well Begins

Texas Co. has made location for Macirema No. 1 test well in Sec. 6-30s-22e in the McKittrick area. Victor Exploration Co.'s No. 1 in Sec. 32-29s-22e is drilling at 2045 ft. Gray Amicola was topped at 1720 ft. Wilshire Oil Co. has abandoned McKittrick No. 3 in Sec. 12-30s-21e at 3456 ft.

Shark Tooth Test Planned

In the Shark Tooth area of San Joaquin Valley, Barnsdall Oil Co. is ready to start work on S. P. No. 1 in Sec. 23-28s-28e.

Belridge Try Idle

Belridge Oil Co.'s No. 62-W-33 in Sec. 33-28s-21e in the South Belridge area continues to stand idle at 14,107 ft. Pipe is set at 13,944 ft.

Edison Test Coring Ahead

Cohn Estate No. 1, a wildcat test in the Edison area, sponsored by Caliente Oil Co., continues to core steadily ahead at 3480 ft. Fred E. Stewart's Thomas No. 1 in Sec. 27-30s-30e is idle at 605 ft. United Exploration Co., meantime, is preparing to run formation test of the interval of 2720-2890 ft. in Weichett No. 65-26 in Sec. 26-30s-29e. Oil sand was topped at 2691 ft. and schist at 2699 ft.

Cantua Creek Try Gives Up

Cantua Creek Oil Co. has abandoned at 6552 ft. S. P. No. 1 in Sec. 3-17s-15e in the Cantua Creek area in Fresno County.

Bacon Hills Try Drilling

Seaboard Oil Co.'s Seaboard-Bandini No. 24-21, its second well in the Bacon Hills area, is drilling at 6442 ft. in brown shale. Located in Sec. 21-28s-20e, the test is now below the Button Bed and is correlating 250 ft. lower than the first well. Electric log was run to 6376 ft.

Kettleman Test Deeper

Standard of California last was reported redrilling at 8996 ft. with its No. 73-30V in Sec. 30-23s-19e in the Middle Dome area of Kettleman Hills. Original depth is 12,389 ft. in Eocene oil sand. The redrill job should be at a comparable depth early in August.

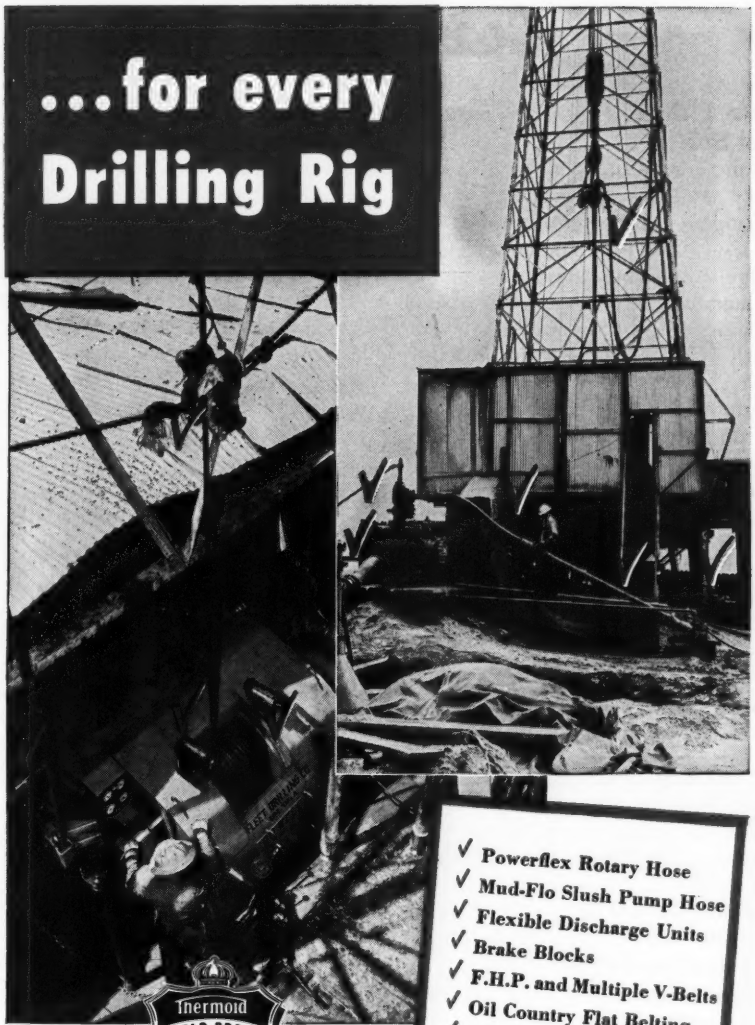
Panoche Creek Prospect Going

Near Panoche Creek in Fresno County, Seaboard Oil Co. is prospecting ahead at 5303 ft. with Lillis No. 85-36 in Sec. 36-15s-12e.

Ten Section Job Redrills

Shell Oil Co.'s redrill of KCL-A No. 53-30 in Sec. 30-30s-26e in the Ten Section field has reached 12,178 ft. and continues on down. Old depth is 13,745 ft.

...for every Drilling Rig



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You will find it to be both wise and convenient to specify Thermoid "Built for the Job" products

Coastal and Northern District

Gato Ridge Test Starts

Union Oil Co.'s widening exploratory program is marked by the staking of Giorgio No. 1 in Sec. 12-8n-32w, two miles east of the Gato Ridge field, Santa Barbara County.

General Petroleum Corp. drilled its Giorgio No. 1 about one-half mile south of the new test, without commercial success. It went to a total depth of 1255 ft. in basalt before giving up the hunt in December, 1942.

Union's Henderson No. 1, an east extension test of the West Mountain field in Ventura County, has been completed at 4950 ft. flowing initially 80 barrels daily. Location falls in Sec. 23-3n-21w. C. D. L. B. No. 4 in Sec. 32-3n-18w in the Simi area, a recent completion, was last reported making 48 barrels of 16 gravity oil a day, cutting 3.2 per cent. Redrilled depth is 1820 ft.

Orcutt Try Gets Ready

Northwest of its Los Flores No. 1 discovery well, Sunray Oil Corp. has staked Los Flores No. 2 in Sec. 4-8n-33w in the Orcutt area, Santa Barbara County. No. 1 came in from a plugged back depth of 5467 ft. for 280 barrels of 36.2 gravity oil daily, along with 160,000 cubic ft. of gas.

Sespe Project Drilling Ahead

Eagle Rock Petroleum Co. has spudded and is drilling ahead in surface formations with its Eagle Rock No. 1 in the Sespe area on Sec. 36-5n-20w, Ventura County.

Monterey Co., Try Planned

North American Oil Consolidated and Jergins Oil Co. are considering a joint test well near the west quarter corner of Sec. 35-22s-10e, three miles south of the town of San Ardo in Monterey County.

Texas Co. and C. C. M. O. Co. have been respective sponsors of wildcats in the general area during recent months. Shows found were below commercial standards.

Montalvo Well Fishing Collar

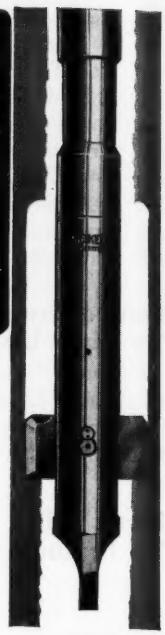
Standard of California's McGrath No. 65-2 in Sec. 30-2n-22w in the Montalvo area of Ventura County is fishing drill collar and bit, with hole bottomed at 8794 ft. The project lies one-half mile from the company's discovery well. Three miles northeast Standard is drilling at 6736 ft. with Maxwell No. 1 in Sec. 23-2n-23w.

The California State Lands Commission has received bids on a 1920-acre tract at the mouth of the Santa Clara River. This tideland lease was offered because of Standard's discovery, about one mile from the mouth of the River.

Ventura Avenue Producer Flows

British-American Oil Prod. Co. has finished Hartman No. 10 in the Ventura Avenue field for 280 barrels of 29.2 gravity oil and 207,000 cubic ft. of gas daily. The new well is located on Bolsa Chica's Hartman Ranch lease, where British-American controls the rights below 7500 ft.

IF YOU WANT TO KEEP OUT OF *Scrapes*



...get a BAKER WALL SCRAPER on the job! It will enlarge the hole, or just scrape off the "cake" which-ever you want. Blades open positively — do their stuff — and then close to come safely out of the hole. It's easy to run.

BAKER *Rotary* WALL SCRAPER

ASK THE *BAKER* MAN

Oxnard Well Drilling On

Parisinoil Co., which is headed by Bert Rovere of the famous Paris Inn at Los Angeles, is drilling at 1850 ft. with Todd No. 2 in Sec. 6-1n-21w in the Oxnard area, Ventura County. San Miguel Oil Co., meantime, is drilling at 98 ft. with its Todd No. 2 in the section.

Ojai Try Spot Cores

Richfield Oil Corp. is spot coring at 2862 ft. with Ojai No. 46 in Sec. 13-4n-22w in the Ojai area of Ventura County. The project is one of a series endeavoring to ferret out new deep zones. The company has more than a score of wells in the area producing from around 1100 ft.

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FINE IN CANDLES
A HEADACHE IN OIL LINES

Nobs Wax Solvent will dissolve and remove the most persistent waxes and paraffines from wells lines and traps.

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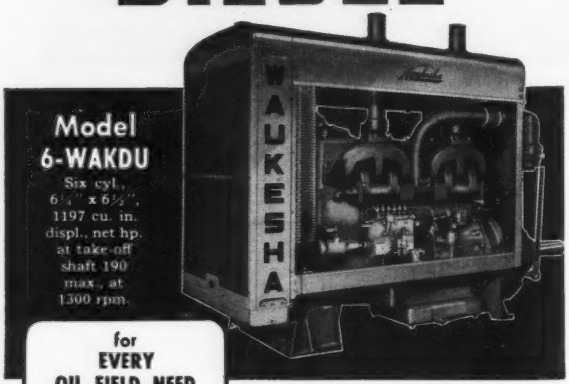
Pipe Size	40 Ft. Length	30 Ft. Length	20 Ft. Length
2 inch	2.00	1.50	1.00
2½ inch	2.00	1.50	1.00
3 inch	2.00	1.50	1.00
3½ inch	2.25	1.75	1.25
4 inch	2.25	1.75	1.25
4¾ inch	2.50	2.00	1.50
5 inch	2.75	2.25	1.75
5¾ inch	3.00	2.50	2.00
6⅝ inch	3.00	2.50	2.00
7 inch	3.50	3.00	2.50
7⅝ inch	4.00	3.50	3.00
8⅛ inch	5.00	4.50	4.00
8⅝ inch	5.00	4.50	4.00
9 inch	5.50	5.00	4.50
9⅝ inch	5.50	5.00	4.50

The Oil Tool Corporation

3075 Cherry Ave. Long Beach 7, Calif.

Phone 481-81 L. A. Phone NEvada 610-24

There's SuperPower in this RUGGED, HEAVY-DUTY UNIT built around the WAUKESHA Invincible DIESEL



Model 6-WAKDU
Six cyl., 6¼" x 6½", 1197 cu. in. displ., net hp. at take-off shaft 190 max., at 1300 rpm.

for EVERY OIL FIELD NEED
Oil Field Drilling
Mud Pumps
Pipe Line Pumps
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Pumping
Electric Power Generation

■ Here, indeed, is the answer to your heavy-duty power requirements—a big, four-cycle Waukesha Diesel that combines abundant power, flexibility, smoothness and acceleration with high fuel economy, long life and low upkeep. It incorporates the advantages of Waukesha's extensive wartime experience in building heavy-duty engines, plus 20 years of Diesel research and development.

Performance-proved features built into this modern Waukesha Diesel include: husky, 7-bearing crankshaft, equipped with 4¾" main bearings and 3¾" crankpins in steel-backed, copper-lead babbitt; crankshaft journals and crankpins hardened to 600 Brinell for long life; hardened, wet-sleeve cylinders of Waukesha alloy iron, tested to 350-400 Brinell; oil cooled aluminum pistons fitted with four non-sticking, wedge-type compression rings and two oil control rings; full-floating piston pin, more than 2" in diameter, hardened and lapped to mirror finish; hardened exhaust valve seats; full pressure lubrication, with large capacity filters and oil cooler; American Bosch injection equipment. Gasoline-engine starting insures ample cranking capacity at all times, with prompt starts even in sub-zero weather. Electric cranking if preferred.

Consult Waukesha Engineers on your power needs.

WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN
NEW YORK • TULSA • LOS ANGELES

Sespe Park Try Drilling

In the Sespe Park area, Republic Operators, Inc., is making hole ahead at 463 ft. with Arundell No. 6-1 in Sec. 6-4n-19w

South Mountain Well Running Pipe

F. E. Fairfield's South Mountain No. 11 in Sec. 24-3n-21w in the South Mountain area is running 7-in. combination string to complete at 4923 ft. Converse No. 2 in Sec. 23 is a rig.

Arroyo Grande Well Completed

Adams Oil Co. has given the finishing touches to Dollie No. 10 in Sec. 6-32s-13e in the Arroyo Grande field in San Luis Obispo County, pumping 25 barrels daily. No. 9 is a location and Adams No. 3 in Sec. 31-31s-13e is a rig. The company's present development program in the field calls for 20 wells.

Cat Canyon Adds Well

Douglas Oil Co. has a new well in the Cat Canyon field. It is No. 14 in Sec. 27-9n-33w, which was completed at 6300 ft. for 270 barrels of 12 gravity oil daily, cutting 1.2 per cent. No. 11 is drilling at 6114 ft. No. 12 is only a foundation.

Dixon Adds Gas Producer

Amerada Petroleum Corp. has completed Marie Wineman No. 1 in Sec. 22-6n-2e in the Dixon area, Solano County. It flowed from 4883 ft. at the rate of 1,780,000 cubic feet of gas daily through a 3/16-in. bean.

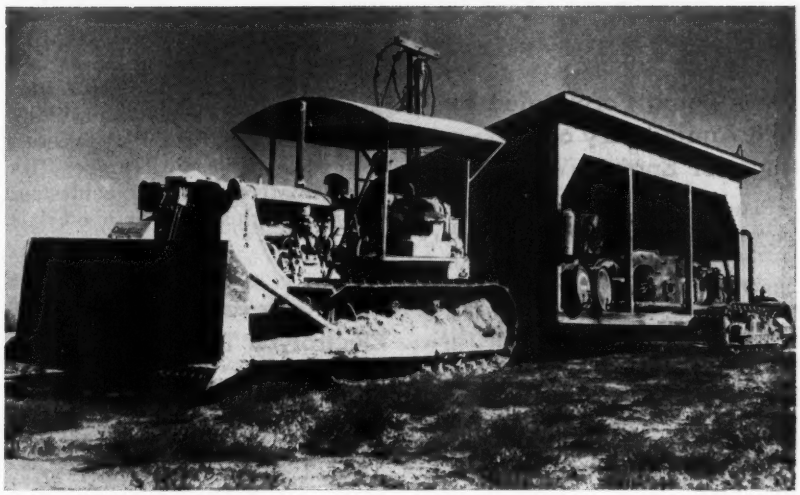
Willows Try Cutting Pipe

After drill pipe stuck at 8294 ft., General Petroleum Corp. now is cutting fish at 5110 ft. in Llano Seco No. 1 in Sec. 33-20n-1w in the Willows area, Butte County. Total depth is 8306 ft.

Oil Base, Inc. Offers Free Samples of New Hand Cleaner

To prove how effectively OB Hand Cleaner removes crude oil, grease, tar, gum, varnish, creosote, printer's ink, Black Magic oil base drilling fluid, and almost any substance not soluble in water — Oil Base, Inc. is offering a neatly packaged free sample to all who request one. A small dab rubbed into the hands like ordinary soap and wiped off on a paper towel or rag will remove all traces of dirt and grime from the hands within a few seconds.

Scrubbing and scouring is never necessary. OB Hand Cleaner dissolves dirt in one application. It contains Senna, a medicinal herb for soothing cuts, scratches and abrasions. Devoid of water, OB Hand Cleaner protects hands from chapping, and is ideal for use in cold freezing climates where moisture cracks skin. A little on a rag keeps tool handles free from oil and grease. Especially recommended for mechanics, machinists, oil field workers, painters, roofers, printers and those in kindred trades. Packaged in one and five pound cans. Write for free sample to Box 3735 Terminal Annex, Los Angeles 54, California.



Rigging-up and tearing-down are fast with electric drilling. Scene from the forthcoming General Electric movie "Lease on the Future," part of the new G-E program soon to be released showing the benefits of electrification in the oil industry.

This electric drive is made up of small units, all of which can be hauled on skids or loaded on trucks. Expensive excavations for foundations are eliminated. Units are merely placed in the most convenient locations and simple electrical conductors are attached. This flexibility is particularly helpful where drilling sites are cramped or hilly, or where the rig is carried on barges for drilling under water.

Erection of New $25,000,000 Western Steel Mill Well Under Way

More than 4,000 tons of structural steel has been erected thus far for the building which will house part of Columbia Steel Company's new $25,000,000 cold reduction sheet and tinplate mill at Pittsburg, Calif., it was announced recently by J. Lester Perry, president of this West Coast subsidiary of United States Steel Corporation.

Describing the progress of Columbia's improvement program, Mr. Perry said that a new fireproof wharf has been completed in the deep water channel adjacent to the Pittsburg Plant, to berth ocean-going vessels. A large barge pier has been built nearby.

Shipments of materials for the new plant are being received daily, with some 600 carloads of machinery and equipment already delivered to the site. This included several new 65-ton and 80-ton Diesel locomotives to handle increased traffic within the plant in connection with the cold reduction processes. Five miles of new railroad trackage also has been laid.

Mr. Perry said that excavation work is proceeding rapidly for underground control rooms and foundations for heavy machinery, with about 500,000 cubic yards of earth and rock moved to date. Construction of the new mill involves a considerable amount of underground work, since control and auxiliary equipment of the various process lines and mill units will be located in air-conditioned basements beneath the machinery served.

Preliminary foundation work also is well under way at the site, and some 23,000 cubic yards of concrete have been poured for permanent structures for the new mill.

Nearing completion east of the plant are a new Administration Building, an Industrial Relations Building, and a modern hospital. These buildings are expected to be

ready for occupancy late in July and will be the future headquarters of the Pittsburg Plant.

The new cold reduction mill, located in the center of Columbia's present 400-acre plant, will produce the first cold reduced steel sheets and tinplate to be manufactured on the Pacific Coast. About 700 men are now employed on the construction of the plant and related facilities.

Plans Being Formulated for 60th Anniversary of Superior Engine

Plans are under way for observance in 1948 of the 60th anniversary of The National Supply Company's Superior Engine Division plant. An Observance Committee, consisting of W. F. Tiemann, works manager; Robert M. Pearson, manager of sales; George F. Noltein, chief engineer; George F. Wells, plant controller; and Herman Houston, of the sales department, has been appointed.

The Superior Engine plant, which produces diesel and gas engines widely used in the oil fields, and diesel engines for municipal and private power plants and marine services, grew from a small machine and repair shop established by P. J. Shouvlin in Springfield in 1888. Many of the first Shouvlin engines, which operated on natural gas, were used for drilling and pumping in the North Lima oil field then at its peak. At that time Ohio was producing one-fifth of the world's oil.

The rise of the automobile industry, coupled with the discovery and exploitation of other oil fields, led to steady expansion of the Springfield plant. Manufacture of a line of lower-compression semi-diesel oil engines was begun there in 1920, and the firm subsequently purchased the Otto Engine Works, Philadelphia, to move into diesel engine production. Later in the 1920's, the diesel engine industry in the United States grew away from European designs, and Superior engines since then have developed along lines best suited to American conditions and engineering practice.

Since its return to peacetime production, the Springfield plant has been undergoing a general expansion and improvement program to increase its production of heavy-duty diesels and gas engines. The expansion program is scheduled for completion by early next year.

P. J. Shouvlin, founder of Superior Engine, became an executive officer of The National Supply Company following its acquisition of his plant. He retired from active duty as a director about a year ago.

Tentative plans for the 60th anniversary observance at Springfield call for visits to the plant by editors of prominent business and industrial magazines, diesel engineering professors of leading universities, representatives of oil companies and other industries, and public officials.

McRay Develops Electrolytic Treater

A new application of an old principle, the McRay Treater controls electrolysis, removes scale and prevents its formation on sub-surface equipment of oil wells.

Run in the well on the end of the rods or in a tube on the bottom of the tubing string, this treater sets up an electromotive force in the fluid, which renders the salts and minerals inert, at the same time it removes the scale, and stops corrosion and electrolysis.

According to the manufacturer, the McRay Treater requires a minimum of attention after installation. In repeated tests over the past three years, this device has proved efficient in preventing scale formation on new rods, pump tubes and equipment and in removing scale formations from old equipment.

Write McRay Sales Company, 1156 East Colorado Street, Pasadena 1, California.

Pacific Perforating Company Announces Opening of Their New Taft Plant

Mr. J. E. Pooler, President of Pacific Perforating Company of Torrance, California, manufacturers of Pacific Slotted Pipe, Gravel Pack Liners and Gravel Pack Sleeves, announces the opening of their new Taft Branch located on the corner of Main and Lincoln Streets, in Taft, California. Formal opening was held Friday, July 11.

This new plant will be set up to furnish slotted pipe with either Keystone (undercut) or Straight Slots. Pipe up to 13⅜" O.D. of practically any type can be slotted by the Pacific Process.

Pacific Perforating Company has a background of many years experience in sand control, and of successful performance under a wide range of field, well and operating conditions.

Mr. Pooler also states that their Bakersfield Branch will be moved sometime in July to their new location on Pierce Road, Bakersfield. Both the Taft and Bakersfield Plants will be under the able management of Ralph Carter, who is well known to oil men of this area.

Ryerson Issues New Booklets

Recently published are three booklets on Allegheny Stainless Steel as used in 1) the Meat Packing Industry; 2) the Petroleum Industry, and 3) the Dairy Industry.

Each booklet covers specific applications, performance records, etc., pertaining to the industry. The literature also includes information on corrosion resistance, physical properties, fabricating procedures, and forms of Allegheny Stainless Steel available.

Stainless fabricators, manufacturers of stainless equipment and firms engaged in the meat, petroleum or dairy industry may secure copies from JOSEPH T. RYERSON & SON, Inc., distributors of Allegheny Stainless Steel from warehouse stocks. When writing state the particular booklet or booklets wanted, addressing the company at P.O. Box 3817, Terminal Annex, Los Angeles 54, California.

Recent Developments in Casing

(Continued from Page 15)

$$S_c = \frac{P_c \text{ (Tension)}}{A_c}$$

$$S_p = \frac{P_p \text{ (Compression)}}{A_p}$$

Assuming linear stress distribution across the wall thickness, average stress is correct with 5% where the D/t of the section is on the order of 20 or higher.

Appendix 2

Stresses Due to Internal Pressure are Based on Barlow's Formula

Coupling:

$$S_c = \frac{{}_pD_c}{2t_{Tot}}$$

Pipe:

$$S_p = \frac{S_cD_c}{D_p}$$

(Note: This approximation makes allowance for the smaller diameter of the pipe as compared to the coupling).

Bibliography

1. Robert J. Kettenburg and Fremont R. Schmieder—"Oil-Well Casing Failures" — Drilling & Production Practice, 1945.
2. P. D. Thomas and A. W. Bartok—"Leak Resistance of Casing Joints in Tension"—Drilling & Production Practice, 1941.

Abstract of a paper presented under the same title at the 1947 Spring Meeting, Pacific Coast District Divison of Production, American Petroleum Institute, Los Angeles, California.

Miramonte Well Redrills

Pacific Western Oil Corp. is redrilling at 11,279 ft. with National Royalties No. 1 in Sec. 5-26s-22e in the Miramonte area of Kern County. Original bottom is 16,668 ft. Enmark No. 1 in Sec. 5-17s-19e in the Riverdale area is running electric log, with hole bottomed at 8100 ft. Midway-McKittrick No. A-84-30 in Sec. 30-30s-22e in the McKittrick area is making hole at 1427 ft.

Checking Cement

(Continued from Page 11)

mixture of radioactive material and cement is pumped into the well at a constant rate, the mass distribution is not always uniform, as has been proved by caliper logs which show considerable irregularity in the diameter of the hole. Washed-out sections will accumulate mass and their increased anomalies appearing on the curve indicate the mass and the vertical distribution. When the top of the cement is reached (as the survey instrument travels up the well) there is a noticeable shift to the left on the curve which then has, for the remainder of the hole to the surface, a comparable similarity to an electric log of the well or to the gamma ray log that was run before the cement was placed behind the pipe.

Coalinga Try Cores

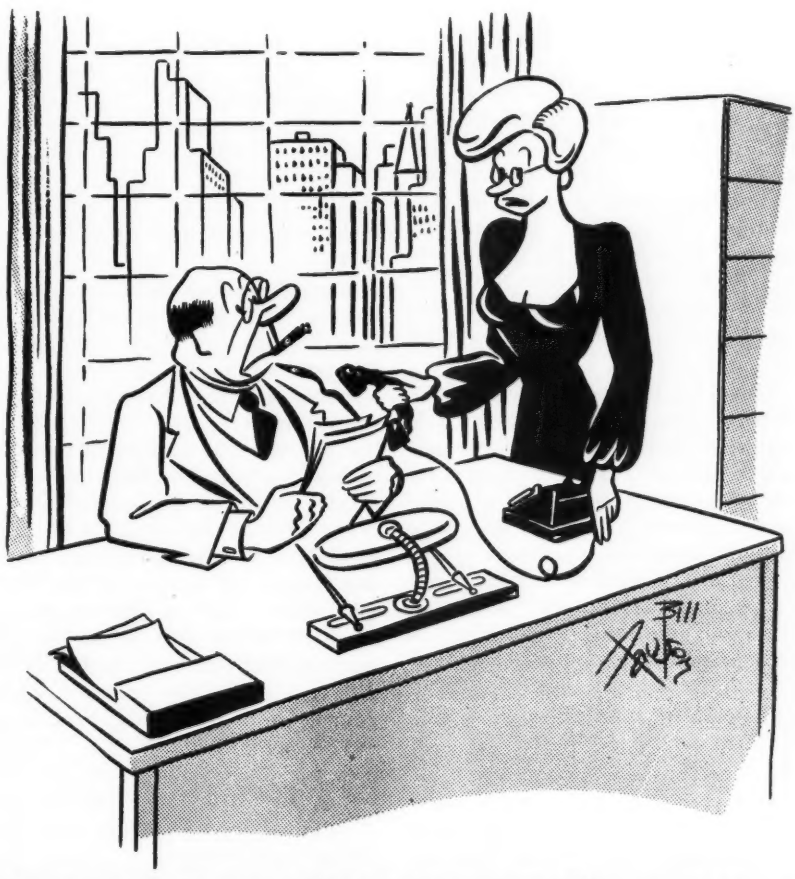
Robert S. Lytle, Operator, No. 58-34 in Sec. 34-20s-15e in the Coalinga area is coring ahead at 8704 ft.

Cuyama Test Makes Progress

In the Cuyama area in San Luis Obispo County, Oil Well Abandonment Co. is drilling at 3591 ft. with Cuyama No. 1 in Sec. 25-11n-28w.

Belridge Wildcat Production Failure

Relegated to history is Richfield Oil Corp.'s Belridge No. B-2 in Section 21-27s-20e in the North Belridge area, which on swabbing showed but little fluid. Plugged back depth is 8221 ft. KCL No. C-1 in Sec. 20-11n-20w in the Wheeler Ridge area is drilling at 5339 ft.



"I guess that officially ends the Seller's Market, sir. Some STEEL salesman wants to know can he PLEASE show you his samples."

Canada's Greatest Oil Search Spurred On By Imperial's Discovery

Canada is today experiencing the liveliest oil boom in the country's history as more than a score of companies race against time to discover new domestic supplies urgently needed by the Dominion.

A well brought in recently near the prairie town of Leduc by Imperial Oil Limited, which has spent many millions of dollars exploring the area, has given powerful impetus to the search in which ten major companies are taking part. The Hon. N. E. Tanner, Alberta's Minister of Lands and Mines, turned the valve one cold day last February sending the oil into storage tanks as the Leduc well settled down to actual production, according to The Lamp, publication of Standard Oil Company (New Jersey).

It is an ironical situation, observes The Lamp, that Canada, with a per capita consumption of oil second only to the United States, last year imported 63 million barrels, or 89 per cent, of the 71 million barrels processed by its refineries—for all geological evidence indicates that Canada has ample undiscovered oil reserves of its own. Oil comes from sedimentary rocks deposited by prehistoric seas. Much of western Canada is underlain by an ancient sea basin extending from the Gulf of Mexico across the United States and Canada to the wastes of the Arctic.

Texas, at the southern end of the basin, draws much of its great output of oil and gas from sedimentary rocks an estimated 75 million years old, but relatively young as compared with those found in the whole of the Canadian basin and in the states of Colorado, Nebraska, Iowa, Wyoming, the Dakotas, and Montana. These are perhaps 300 or 400 million years old.

Canada thus has the same sediments as the seven states. Yet in those seven states, 15,600 test wells have established one and a half billion barrels of proved reserves, mainly in Montana and Wyoming, while in the basin north of the international boundary 1,600 test wells have led to production and reserves of only 164 million barrels. There is no reason in geology, The Lamp declares, why 15,000 test wells in the Canadian west should not duplicate the reserves found south of the boundary.

The well brought in around Leduc, sixteen miles south of Edmonton, lies midway of the great sea basin. It has been called the most encouraging initial flow since the discovery of Turner Valley Field, which has been the one great oasis in Canada's desert of oil production. Imperial Oil Limited, Canadian affiliate of Jersey Standard, played an important role in developing Turner Valley. Now it is exploiting to the fullest the potentialities of the Leduc field. Four more test wells have been spudded in since the February strike, but only months and perhaps years of further drilling will determine the size and importance of the field, The Lamp says.

To date, Leduc No. 1 is producing a good 39 degree gravity crude, which the refiners like because it yields a maximum of gasoline and other light products needed by the farming population of the prairies. This is in contrast to the yield by the other wells on the plains—heavier crudes which are useful mainly as railroad and industrial fuels which are in limited demand there.

The search for oil in the west has become a race against time. A race to supplement crude supplies domestically before the refiners are forced to increase imports at high transportation costs. Turner Valley Field, in the foothills of the Canadian Rockies, has been the most accessible of Canadian fields. Its crude reaches the refineries of Calgary, only 30 miles away, at a pipeline cost of 9¼ cents a barrel. Turner Valley has so far produced some 87 million barrels of oil and naphtha and retains a reserve of 34 million barrels. But production has declined from 10 million barrels in 1942 to six million last year. If new and easily accessible fields are not found, The Lamp says, the refiners of Alberta must sooner or later increase their imports.

Last year these refiners imported only 6.7 per cent of their crudes. They came from Montana at a cost of 70 cents a barrel for rail transportation. If supplies are needed beyond Montana's capacity to provide, rail costs will go up to $1.73 a barrel for Wyoming crude, $2.63 for Oklahoma, and $2.73 for Panhandle and Texas.

Imperial Oil holds exploration rights in Canada on something like nine million acres, an area roughly as large as Massachusetts, Connecticut, and Rhode Island combined, and most of the acreage lies in the west, The Lamp reports. Since western exploration was begun in 1917, the article adds, Imperial has invested $23,700,000 and has drilled in 182 test wells. The total depth of these wells is 850,000 feet, about 160 miles of hole, or a quarter of all the footage drilled in the west by the oil industry.

Imperial has done slightly less than half the geological work and approximately a third of the seismic work carried out by the industry in the west. It has had its share of both failure and success, The Lamp concludes, and in the new Leduc well may have another of its triumphs.

ALERT MAN WANTED

By well established oil tool manufacturer, in Los Angeles, man capable of assisting Advertising Manager and handling Export Order Department. Desire man familiar with oil field drilling and production operations and background of oil tool advertising experience. Give full details in reply; state education, experience, age, marital status, and give references. Employees of this company have been notified of this advertisement. Address reply to Box Z, c/o California Oil World, 706 So. Valencia St., Los Angeles 14, California. (7/5b)

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